MSc in Finance and International Business

Author: Andrej Zgur
Student Number: 272671

Academic Advisor: Mr. Kurt Pedersen

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The economy of the Roman Empire in the first two centuries A.D.

An examination of market capitalism in the Roman economy
Dedicated to
Nona Ljubica, Nono Rado, Nona Beba, and in loving memory Nono Blaz

Thanks to
My parents for being patient. Tessa for all the loving support and editing work.
Professor Kurt Pedersen for allowing me to explore.
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Abstract

During the Principate and the first two centuries A.D., the economy of the Roman Empire was a capitalistic market system that was comparable to the economies of early modern Europe in the 17th-19th centuries. In many respects, it was the predecessor to early modern capitalism, and it is no coincidence that the most sophisticated economies of the early modern period were located in former regions of the Roman Empire. This paper attempts to examine the Roman economy in all of its components, in order to highlight a frequently disputed, and often overlooked, view that it did indeed reach high levels of sophistication on which many models are based today. The Roman capitalistic economy reached a peak at some point in the mid 2nd century A.D., and then it commenced upon a path of decline after a virulent outburst of a plague from 165 to 180 A.D. which decimated the population. The ensuing incursions by various tribes and barbarians after this point gave the economy no chance to recover and Roman market capitalism began its decline into obscurity.
Introduction

The Ancient Roman history, especially the ages of the Republic and the Empire have always fascinated scholars and laymen alike. Even some two millennia later, the remnants of this Empire, which stretched over most of Western Europe and all of the Mediterranean, can still be seen today in the various aqueducts, buildings, and tombs that have lasted through the ages. Not as visible, but certainly even more influential, Roman law has also passed down the centuries and is the forerunner of most forms of modern law, and in many law universities is still taught. These and other achievements of the Romans are not only bountiful, but also amazing in the context that once the Empire declined, it took Western Europe at least an entire millennium to reach equivalent levels of civilization. The most interesting part, however, is that while we nowadays often speak of Roman architecture, law, wars of conquest, debauched emperors, slavery, etc., we rarely speak of the Roman economy. That is clearly a mistake, for we owe just as much, if not even more to Roman economy than is readily accepted.

Therefore, the main aspect of this paper will be to investigate the Roman economy to the point when it reached its maximum level of sophistication and its subsequent decline. It will prove that the Roman economy, by the time it reached its peak, was a capitalistic market economy, in many ways similar to early modern western capitalistic nations in the 17-19th century. This peak will be shown to transpire within the period of the Principate (27 B.C. – 235 A.D.) and will actually be narrowed down as occurring by 160 A.D., and only then did the process of true recession/decline commence. This recession eventually precipitated the well-documented and often cited crises of the 3rd century A.D, but these will not be examined since there is a general concurrence between scholars regarding the problems, especially those in the mid-end of the 3rd century.

To prove the premise of a capitalistic market economy, the Roman economy will be examined from all possible aspects, consisting of, but not limited to; commerce, industry, finance, and labour. Each of these aspects will then be subdivided further, in order to fully explore and be able to compare and contrast the Roman economy with
more modern economies. Contrary views will be included throughout the paper so that by this juxtaposition an equitable view of the facts will be displayed. This is especially essential since the nature of research in this field leaves little option. Too little information has remained from the Roman times to be able to accurately make modern economic models, and the few facts that have remained are often cause of much heated debate.

Definitions

Introduction

The nature of the Roman economy still seems to be a question that has not yet fully been answered. The debate can be classified under two positions, one called ‘primitivist’ and the other ‘modernist’. “The ‘primitivist’ position, associated with Karl Polanyi and [Moses] Finley, has been represented as one of a subsistence agricultural economy with autarkic households - an economy of no growth, no markets, insignificant trade, and non-rational economic actors. In supposedly polar opposition, the ‘modernist view’, associated with M. I. Rostovtzeff, is credited with interpreting the ancient economy in capitalist terms of significant growth, vital markets, long-distance trade, and rational actors in pursuit of profits.”

This is not to say that there is no middle ground. In fact, various authors perceive the Roman economy to be defined by neither extremes and to a certain extent even Rostovtzeff and Finley show signs of accepting aspects of their respective opposing views. It is ultimately important to note that the two terms are used for purposes of simplification and that no author has committed himself to belonging exclusively to any particular viewpoint - it is more often the case that these authors are classified by others according to the main category that their theory of the Roman economy falls under. In that respect, one of the purposes of this paper will be to prove that the Roman economy was a capitalistic market-oriented system.

Meyer saw the Roman economy on similar terms as economic development in the 19th century, in that he saw trade as the main source of wealth, while Bücher believed in a closed household economy. Rostovtzeff contrary to that claimed the economy was advanced, and spoke of a strong urban-capitalistic society that was nearing the stage of industrial capitalism. Weber however discussed the parasitic consumer-city
in comparison to the producer-city in the middle ages. In his eyes of the society the people who conducted trade and handicraft had a lower social rank. One of the strongest concepts of the ancient economy was brought forth by M. I. Finley who built upon early primitivist’s like Hasebroek and Polanyi. Finley claimed the ancient economy was regulated by social and political forces. As such the ruling classes did not have an economic rationalism, and due to the mentality of the time, the investment in land was seen as the most secure and serious form of investment. Trade and handicraft as such were of little or no importance. There was no market-oriented economy, trade existed but it was mainly focused on luxury that was consumed by a small fraction of the population. The mentality of the ruling class also did not allow for any technological progress, and stood in the way of any rationalisation of production.²

It is important to narrow down exactly what time-frame is being discussed when mentioning the Roman economy for the purposes of this paper. Some authors seem to believe that the Roman economy remained the same throughout its entire history; this however, is not the case and one cannot assign the entire history to one model. Considering this issue from a logical perspective, one can hardly claim that the economy of the Romans in 700 BC (when Rome was a mere settlement on the Tiber) and the economy in 100 AD (when the Roman Empire stretched over all over Western Europe and the entire Mediterranean region) shared the same characteristics. The Roman economy, much like any economy, changed over time and adapted to the situations it was confronted with. In that respect, the specific time period that will be examined for this paper is the 1st and 2nd century AD - widely believed and accepted as the height of Roman achievement. The chief aim is to pinpoint the Roman economy at its height, when it reached its maximum size and maximum sophistication.

With this time span in mind, various counter-theories can be dismissed, as for example, Bücher’s belief that the Roman Empire never went beyond a household economy - because, as Rostovtzeff already correctly surmised, Bücher’s theories focus too much on the time of Emperor Diocletian (284-305 AD).³ Just before Diocletian’s time, the empire underwent an onerous 3rd century filled with civil wars, foreign invasions and plagues, with some 30 emperors ruling from 235 to 284 AD (in
other words, 30 emperors in a span of 49 years). That such tremendous internal and external strife would have been extremely detrimental to the economy is clear: using this period as a representative example of the economy clearly does not provide a balanced perspective. Similarly, Salvioli and Max Webber seem to focus too much on the period of the Roman Republic. The Roman Empire (the Principate) was born out of the Roman Republic, and instead of being an end to development, economic development continued. Focusing largely on the period of the Republic is therefore also not an answer. The time span that needs to be examined is the early Principate (approx. 30 BC to 200 AD). However, any authors trying to prove anything about the Roman economy during this time span cannot be taken too seriously when they use examples that range too far from this period. The fact that such comparisons, as outlined already, are 100-200 years too early or too late, would be comparable to taking information from the economy of Germany in 1807 and then claiming that exactly the same applies for Germany in 2007.

Before the in-depth examination can truly commence, some terms need to be defined which have already been used in this paper. These are the following: household economy, subsistence economy, capitalism, and market economy. Even though it would appear that many of these terms are self-explanatory and that there should be no need to define them, observations made during research revealed that in truth many authors were not actually disagreeing on the nature of the Roman economy, rather on what is to be understood with regard to specific terms. For example, on a few occasions two or more authors have quoted the exact same source, and have then used it to describe the exact same or very similar economic principle, only to suddenly completely diverge - with one author claiming the economy was capitalistic, and the other that it was a subsistence economy. It became clear that the authors were in fact disagreeing to a larger extent on the question of ‘what is capitalism’ rather than on ‘what was the Roman economy’.

**Capitalism & Market Economy**

Why is there such a disparity when it comes to the understanding of the word capitalism? There definitely seems to be a very clear and agreed-upon simple definition of the word capitalism, which can be understood as: “An economic system
in which the means of production and distribution are privately or corporately owned and development is proportionate to the accumulation and reinvestment of profits gained in a free market.”

Another example is: “An economic system in which natural resources and means of production are privately owned, investments are determined by private decisions rather than by state control, and prices, production, and the distribution of goods are determined mainly by competition in a free market.”

Almost all definitions are similar to these two, which should make capitalism more easily understood for the purpose of this paper.

Some confusion arises however, when Finley’s views are examined in his book “The Ancient Economy”. He is often quoted as a ‘good’ example of a primitivist, and he claims that the Roman economy did not have a free-market capitalist system. Some examples of his thoughts are: “ancient society did not have an economic system which was an enormous conglomeration of interdependent markets...There were no business cycles in antiquity; no cities whose growth can be ascribed, even by us, to the establishment of a manufacture” and “It will be objected that I am arbitrarily restricting ‘economics’ to the analysis of a capitalist system, whereas non-capitalist or precapitalist societies also have economics, with rules and regulations and even a measure of predictability, whether they conceptualize them or not.” In essence, Finley questions whether the Roman economy was a free-market capitalistic system, and he comes to the conclusion that it was not. The problem with this is that several pages later he writes: “the Graeco-Roman world was essentially and precisely one of private ownership, whether of a few acres or of the enormous domains of Roman senators and emperors, a world of private trade, private manufacture.” The problem suddenly becomes very clear, as this last quote is essentially a definition of capitalism. This might have been a mistake on Finley’s part, but it most probably means that Finley’s notion of ‘capitalism’ is not based on the same premises as the definitions mentioned above. Finley, much like most authors, does not describe exactly what he understands under the term capitalism and free-market economy; the task of understanding Finley’s view on capitalism is left largely to the reader under the condition of needing to have read almost his entire book. As such, for the intent of this paper, the basic definition of capitalism outlined in the two examples provided, will be used as a reference point. In essence, capitalism is a system where most forms
of capital are free to be owned, bought and sold in a free market by private and/or corporate individuals.

This basic viewpoint can clearly be criticised for its simplicity, and in truth capitalism may certainly be far more complicated; however, it is important to focus on the basics before any further steps are taken. A more detailed examination of capitalism in a historical context was conducted by Henri See (2004) who differentiated between different types of capitalism in an effort to explain that the present day form can be ascribed to a model of ‘modern capitalism’.13 He very clearly divides capitalism into commercial, financial and industrial capitalism to demonstrate that historically, some aspects could have existed while others did not. “Indeed, what are the essential characteristics of capitalistic society, as it exists today? The expansion of international commerce on a large scale is not its sole distinguishing mark; on the contrary, it includes also the flowering of a large scale industry, the triumph of machinery, and the growing power of the great financial houses. In a word, it is the present day union of all these phenomena which really constitutes modern capitalism.”14 Based on this, it is evident that modern capitalism is formed by a combination of commercial, financial and industrial capitalism and “the triumph of [the modern] capitalistic organization did not come until the nineteenth century; and nearly everywhere, indeed, its final triumph awaited the coming of the second half of that century.”15

It is not the intent of this paper to attempt to prove that Roman capitalism was the equivalent of modern capitalism, rather that the Roman economy was a form of capitalism. As See correctly surmised: “Certain writers have asserted that capitalism originated as soon as mobile wealth had been developed; and, if this definition be accepted, capitalism may be said to have been in existence in the Ancient World, not only in that of the Greeks and Romans, but even further back in more ancient societies which carried on active commercial transactions. But such is a case of purely commercial and financial capitalism”16

This subdivision of capitalism is important not only in order to be able to examine Roman capitalism better, but also to explain Finley’s view of why he believed the Romans had no capitalism. It becomes evident that he was focusing very strongly on
the industrial capitalism aspect, and he either believed that capitalism is equivalent to industrial capitalism, or that industrial capitalism is the most important aspect of capitalism. Whatever the case may be, his focus on only this aspect is too narrow to disprove that capitalism did not exist. This ‘mistake’ is also made by various other authors, like for example, Mason Hammond.

According to Hammond, industry “never really developed beyond a household economy, that is, one based on either the small producer-shopkeeper in towns or the artisan-laborer on large estates.” The only regions of the Roman Empire in which Hammond finds some form of industrial concentration, are Egypt with its state monopolies, and also in areas where specific raw materials are to be found. For example, the sands found on the coast near Sidon were ideal for glassmaking; the clay found near Arezzo in Italy and other locations in Britain were good for a specific type of red ware which became the common tableware of the Empire. He claims, however, that the industry of these locations never reached the mass production that modern industry boasts and that even though there was some subdivision of labour, it was still characterised by individual workmen situated in the same building, working exclusively in manual labour. Hammond sees no changes whatsoever in the techniques of production, and furthermore, no changes in production or consumption. In all fairness to Hammond, he also examined the financial system and found fundamental shortcomings in it as well, but the key issue here is that Hammond appears to be comparing the Roman industry to ‘modern industry’. Even though his paper was published in 1946 it is dangerous to make comparisons of this nature, as it tends to lead to the realm of absolutes. Too many authors appear to have the notion that capitalism, industry, commerce, etc. are simply what they can observe outside their windows. It is therefore important to break down all of the concepts into their definitions - their true meanings - and not in terms of how they are defined by the context of the current moment. Naturally there has to be a limit to the flexibility of interpretations, and that is fundamentally why this paper is structured in such a way that it uses the basic definitions for all concepts.

The final term which needs to be defined is the market economy. A market economy is an “economic system in which the production and distribution of goods and services take place through the mechanism of free markets guided by a free price
system. In a market economy, businesses and consumers decide of their own volition what they will purchase and produce. Technically this means that the producer gets to decide what to produce, how much to produce, what to charge to customers for those goods, what to pay employees, etc., and not the government. These decisions in a free-market economy are influenced by the pressures of competition, supply, and demand. This is often contrasted with a planned economy, in which a central government decides what will be produced and in what quantities.”

Unlike confusion with the other terms, this definition certainly does seem to be accepted by most, and for example Peter Temin claims that “the economy of the early Roman Empire was primarily a market economy. The parts of this economy located far from each other were not tied together as tightly as markets often are today, but they still functioned as part of a comprehensive Mediterranean market.” He also defines the market economy as “many individual actions and interactions [that] are seen best as market transactions…there were enough market transactions to constitute a market economy, that is, an economy where most resources are allocated by prices that are free to move in response to changes in underlying conditions…[and] that markets in the early Roman Empire typically were equilibrated by means of price”

**Household Economy & Subsistence Economy**

For example, the terms household economy and household production are also not as clear as they may seem. In a paper by Duncan Ironmonger, household production is defined as “the production of goods and services by the members of a household, for their own consumption, using their own capital and their own unpaid labor. Goods and services produced by households for their own use include accommodation, meals, clean clothes, and child care.” In reference to the household economy, he writes “The household economy describes the collective activities of households. Often the household economy is called the household sector as distinct from the business, government and foreign sectors. However the household sector is large enough to deserve the term household economy. The rest of the economy can then be called the market economy.” His paper actually deals with the household economy in modern times, and he points to a study that concluded in 1981 which revealed that the U.S. gross household production was $1,709 billion and that it would approximately correspond to 37.5% of the extended GNP. This not only shows that
household economies still exist, but that they are very strong even in the most advanced modern capitalistic systems. It also shows that household economies and market economies essentially co-exist\textsuperscript{27}, so in essence any author claiming that the Romans had a household economy is not really making any great claims. It is obvious that the Romans had a household economy - much like they still exist nowadays\textsuperscript{28}. As long as people cook their own meals, make their own beds, wash their own clothes, etc. a claim to a household economy can be made. The main point is that a household economy is no detriment to the existence of a market economy, since it is the market economy which connects all of the various households and keeps the entire system running. In all fairness, the authors who use such terms are probably referring to a closed household economy, which is an “economy in which goods are not traded. Instead, those goods are produced and consumed by the same households. In other words, a closed household economy is an economy where households are closed to trading. This kind of economy is present, for example, in hunter-gatherer societies.”\textsuperscript{29} Theoretically, as long as any form of trade exists, the Roman system cannot be a closed household economy. Even the most extreme ‘primitivists’ who try to claim that the Roman Empire did not engage in significant amounts of trade, do admit that it did trade.

Another way to disprove the existence of a closed household economy (without even having to prove the existence of a market economy) is by following Rostovtseff’s rationale, where he argues one has only to examine Ptolemaic Egypt, where state control was very strong. The state had partial and full monopolies over most forms of economic life. It used the free labour of its population in all fields of economic/agricultural activity, which led to a complicated economic structure. While this may not have allowed for a large private economy, it can definitely not be referred to as a closed household economy.\textsuperscript{30} Roman Egypt was naturally only one part of a large empire, and this specific type of state-control was very unique for this province. Much of the remainder of the Empire was based more closely on the city-state model of the Greeks. In truth, after having conquered a nation, the Romans left much of its economic systems intact, especially in the East. Instead of pursuing great structural changes in economic systems, the Romans tended to adopt and adapt as best as possible: they generally left the systems as they had existed before. This paper will show that while the general system was a free-market capitalist system, there were
certainly regions which had other systems. Much like Ironmonger mentioned in reference to the market economy which connected various households, the Roman market economy integrated all the different types of economies within its sphere.

Subsistence economy is perhaps a better term than household economy, since it actually signifies a limit to the desired level of economic activity implied in the word ‘subsistence’ – activity which satisfies only the needs, and not much more, of the people it serves. However, even this term leads to a certain amount of confusion as once again, there seems to be a disparity between the definition and the actual usage of the term. In his article “Taxes and Trade in the Roman Empire (200B.C.-A.D.400)” Keith Hopkins writes that “the economy of the Roman empire, in spite of its sophistication in some respects, was predominantly a subsistence economy. The monetary economy constituted a thin veneer of sophistication, spread over and tied to the subsistence economy by the liens of taxes, trade and rent. The concept, subsistence economy, has important implications. The bulk of the labour force in the Roman empire, perhaps 80-90 per cent, were primarily peasants who produced most of what they themselves consumed and consumed most of what they produced. This solid mass of self-sufficient production always stood outside the money economy.”

Hopkins points out a similar concept which has been mentioned previously: that the market economy is a system which connects and combines remaining systems. However, according to him, the large majority of the population functioned within a subsistence economy. In this cited passage, the definition of a subsistence economy is actually fairly close to what generally appears to be accepted: “A subsistence economy is an economy in which a group obtains the necessities of life through self-provisioning. In such a system wealth is not measured in any form of currency, but rather exists in the form of natural resources. Food in a subsistence economy is grown or hunted, and homes built from surrounding trees. Only very short surpluses generally exist, and therefore there is a reliance on renewal and reproduction within the natural environment to ensure survival.”

The problem which arises is that in a true subsistence economy, as per the definition, there does not seem to be a concept or usage of money, or even the existence of a market. The people are self-provisioning, as Hopkins claims, but at the same time he also claims that they had to pay taxes, rents, etc. Hopkins, within the same article,
continues with his explanation of a subsistence economy with the following: “By this I mean that peasants were affected, even burdened, by demands for taxes, for rents and for goods bought in the market (such as knives, or clothes). But the payment of taxes and rents constituted only a minor element out of total production, even if they constituted the major part of peasants’ disposable surplus. The term, subsistence economy, also implies that on average levels of consumption were not dramatically above the minimum level of subsistence. Here again, several distinctions should be made. In general, Roman levels of consumption were obviously and significantly higher than in pre-Roman levels of consumption, at least in the western provinces. Not only was the Roman elite extremely rich, but the lower strata of the empire’s population were differentiated; even among the poor there were differences; hence the high volume of aggregate demand for traded food and goods. That said, the average level of consumption was not high.”

Unlike some authors, Hopkins does actually define what his idea of a subsistence economy is. The confusion lies in the fact that he actually points out that consumption was above the level of subsistence, and that the peasants had access to a market. Therefore, if there was a market and the peasants were on a level above subsistence, why and how can it still be a subsistence economy? The problem lies in the word subsistence, which is defined as “the minimum (as of food and shelter) necessary to support life”. This definition is very clear, and once one is able to produce/consume more than this, a state of subsistence technically no longer exists. By claiming that the Romans were above the level of subsistence, even if not by much, means there was no longer a subsistence economy. This distinction has to be clear, otherwise the question arises: ‘how much more above subsistence must the system be for it not to be subsistence anymore?’ Some authors might actually say that the economic system was a subsistence model, but at twice above the minimum subsistence level. Yet once again, the question is raised: ‘how many levels above subsistence is it then still subsistence?’ By this rationale, one could theoretically claim that the developed nations today live at 50 times the subsistence level, making it appear as though we live in a subsistence economy. There is no problem with using multiples of subsistence to show what level the economy has attained, but there is a problem when claiming for example, that twice subsistence is still subsistence. This should make it clear that when the average of the population produces/consumes above the level of basic subsistence and has access to
the market (whether the access is used or not is unimportant in this context, it is only important that access exists), the system has gone beyond a subsistence economy.

“Subsistence farming is by definition not market farming, not the production of cash crops. The typical “peasant market” was a place where peasants (and no doubt village craftsmen) met from a radius of five or six miles in order to fill gaps in necessities by exchange with each other; there were only a few things a peasant could not produce himself—a metal ploughshare, for example—when everything went well. The paucity of coin finds in genuinely rural areas is no accident. There were circumstances which may have encouraged peasants, especially those nearer the upper limit of family holdings, to turn to cash crops. I am thinking of the presence nearby (ten to twelve miles, no more) of larger towns, of international shrines attracting visitors who needed catering (such as Olympia or Delphi), or of more or less permanent army camps. I suspect, however, that good land so located would have attracted the wealthier landlords.”

**Notions of relativity**

One last concept must be defined before a precise and in-depth investigation of the Roman economy can commence - the idea of ‘averages’ and ‘majority’. The biggest problem for any scholar researching and discussing the Roman economy is that very little information has remained, and what is available, as of yet, is largely insufficient to create any economic models as we know them today. To that extent, most scholars attempt to examine what the majority of the population must have been doing. For example, as cited earlier, Hopkins mentions that 80-90% of the population were peasants. The problem of calling this portion of the population peasants, tends to assume all of them worked in agriculture; however, various sources also assign peasants to working in certain industries and manufacture in rural areas (like in the production of bricks). Most authors (even modernists) will tend to agree with this percentage figure, but only as the percentage of the rural population in the Empire. It is naturally clear that the vast majority of the 80-90% were actually peasants, but Temin for example, pays strict attention to this distinction and ascribes the figure of those working directly in agriculture to 75%.

This would leave some 5-10% of the rural population not directly involved in agriculture, but still living in rural areas.
This high percentage of people living in rural areas and working in agriculture is often one of the main points which primitivists tend to bring to the forefront when trying to disprove the existence of a market economy and capitalism. It certainly is true that the vast majority of the population worked in agriculture, but that does not necessarily signify a subsistence agriculture. “Agriculture provided much more revenue than nonagricultural commerce and manufacturing. However, Roman farming was organized for monetary sale in urban markets, and was, for this reason, clearly different from the subsistence production of feudalism. Agricultural wealth, particularly that produced in provinces, provided a stable, continuous source of tax revenue.”

If 75% of agriculture was actually geared and focused for production towards a market, it cannot be subsistence. In order to finalize this aspect of the debate, the fact that a large percentage of the population working in agriculture does not necessarily imply a non-capitalistic free market economy, one simply needs to look at the United States of America in the 19th century. During this period the U.S. has generally been considered to have been a capitalistic country, and yet in 1810 the rural population amounted to 92%, and it took until 1860 for the rural population to fall to 80%. In 1860 where the ratio between urban and rural areas in the U.S. was roughly similar to the Roman Empire, the U.S. was perceived to have a capitalistic economy. This means that having such a high ratio living in rural areas is actually not a detriment to capitalism: it is therefore certainly possible to have 80% working in agriculture and still have capitalism. It is also important to note that just because the ratio between urban and rural areas was similar, that there is automatic proof of capitalism: this is by no means the case. The rest of this paper will go into much further detail about the Roman economy and why it was a capitalistic market economy.

**Roman Money**

*Introduction*

The Roman Empire most definitely had money and it was used as a medium of exchange, a unit of account, a store of value, and it was easily transportable (liquid): all of the requirements needed for it to be accepted as money. The Roman state naturally backed its own coinage and the importance of this is best defined using a
citation of Marcello De Cecco, who in turn, was citing Mommsen: “Mommsen firmly expresses the idea that it is the state that has the right to establish ‘in the interest of all, what we could willingly call a derogation to Natural Law, by exclusively attributing to a particular substance the special privilege of representing the value of all others; only the State can compel all citizens to accept the choice it has made, and it keeps the right to change its choice according to changed circumstances.’ That in the course of history the choice has fallen on gold, silver, and copper, after all sorts of other primitive substances had been used as money, Mommsen affirms soon after.”

Roman currency was exactly such a system, and the coins were composed of various metals, some in pure form and some a mixture.

From the time of the Republic, and especially commencing under the reign of Augustus, “until the Severan age, the Roman monetary system remained stable, notwithstanding the widening of the area it covered and the various changes it underwent – the introduction of new denominations and new metals, and retariffing of some elements in relation to each other, the transformation of the physical quality of the coins, for instance through debasement: in fact, there were no sudden and considerable rises of prices and the Roman currency almost always enjoyed automatic confidence.”

This stability of over 250 years becomes even more impressive when one considers that it was “difficult to maintain in a system based on the contemporaneous issue of coined gold and silver, of the relationship between aureus and denarius, at least during the first two centuries of the Empire.” This stability of the Roman system should by no means be taken lightly, as it required a good amount of knowledge and understanding on behalf of the state. The problems various Western nations faced in early modern times with their bimetallic and monometallic standards can be taken as a reference point. In fact, according to De Cecco, it is possible that the Roman system was in truth a trimetallic system and not bimetallic. Irrespective if this is accepted or not, De Cecco astutely disagrees with Crawford who writes: “The period I should like to consider is…from about 200 B.C. to about A.D. 200…It was a period in which the Roman coinage-system underwent no sudden, major changes” by claiming: “but, in that period, the Romans developed their monetary system from the relative simplicity of a predominantly copper currency to the extreme sophistication of a trimetallic system, and extended it to apply to the greater part of the lands they conquered, thus forming a domestic monetary area larger
than any the West has ever known.” An additional problem with Crawford’s idea - that the monetary system did not change - is that he focuses predominantly on the time of the Republic and then applies these findings to a time period of 400 years. This is clearly a mistake, for it was actually during the Principate that many changes came to the fore, changes which had already commenced in the Republic.

The Romans most certainly had an extensive currency then, which was backed and controlled by the state, and which underwent various reforms; however, essentially it remained stable for nearly 250 years. Furthermore, “taken as a whole, the literary and documentary sources seem to show that coined money came to be essential to the life of the cities at all social levels. The picture is inevitably composite, but its validity is strikingly confirmed by the evidence of coin finds.” Even rural areas, especially military stations and towns, are attested as being sufficiently monetized at all levels. The best concluding quote for Roman money is brought by Christopher Howgego, who writes: “The denarius became by stages a world coinage, both by an increase in its area of circulation, and by the adaptation of other coinage systems so that they became compatible with the denarius.”

The next several sections will explore all the aspects mentioned in the introduction, commencing with the historic overview of the coinage itself.

**Roman Currency & Historic Development**

**Introduction**

“Roman currency was based on a silver denarius, struck at 84 to the Roman pound (322.5 grs.), that was exchanged against gold coins or base metal fractional denominations collectively called aes (a term that refers to copper and any of its alloys). The gold aureus, struck at 40 to the Roman pound, and the denarius were minted from virtually pure metal (99-99.5% fine). In 23 B.C. Augustus reformed the aes so that fractional denominations were struck in two metals; orichalcum or brass (75% copper; 20% zinc; 5% tin) and pure copper. The rate of exchange was 1 [gold] aureus = 25 [silver] denarii = 100 brass sestertii = 400 copper asses. Romans
reckoned large sums in the *sestertii* (abbreviated HS), although they paid in *aurei* or *denarii.*”⁵⁰ “Accounts public and private, were kept in *denarii* or in *sesterces* (quarter *denarii*), which, though no longer issued in silver, remained a unit of account. Most transactions of ordinary life must have been conducted in the *denarius* and its bronze and copper subdivisions, since the *aureus* was too valuable a coin to come much into daily use.”⁵¹

The following table (Table 1) shows the Roman currency, in all its denominations, minted and used during the reign of Augustus and through most of the Principate.⁵²

Table 1:

<table>
<thead>
<tr>
<th>Denomination</th>
<th>Metal</th>
<th>Weight</th>
<th>In Denarii</th>
<th>In Asses</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Aureus</em></td>
<td>Gold</td>
<td>7.90 grs.</td>
<td>25</td>
<td>400</td>
</tr>
<tr>
<td><em>Quinarius Aureus</em></td>
<td>Gold</td>
<td>3.80 grs.</td>
<td>12-1/2</td>
<td>200</td>
</tr>
<tr>
<td><em>Denarius</em></td>
<td>Silver</td>
<td>3.80 grs.</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td><em>Quinarius Argenteus</em></td>
<td>Silver</td>
<td>1.90 grs.</td>
<td>1/2</td>
<td>8</td>
</tr>
<tr>
<td><em>Sestertius</em></td>
<td>Orichalcum</td>
<td>25.00 grs.</td>
<td>1/4</td>
<td>4</td>
</tr>
<tr>
<td><em>Dupondius</em></td>
<td>Orichalcum</td>
<td>12.50 grs.</td>
<td>1/8</td>
<td>2</td>
</tr>
<tr>
<td><em>As</em></td>
<td>Copper</td>
<td>11.00 grs.</td>
<td>1/16</td>
<td>1</td>
</tr>
<tr>
<td><em>Semis</em></td>
<td>Orichalcum</td>
<td>3.25 grs.</td>
<td>1/32</td>
<td>1/2</td>
</tr>
<tr>
<td><em>Quadrans</em></td>
<td>Copper</td>
<td>3.00 grs.</td>
<td>1/64</td>
<td>1/4</td>
</tr>
</tbody>
</table>

Even though the whole monetary system would prove to be stable, it still came to various reforms through the ages. During these reforms some old denominations were phased out, and weight and content of certain coins was changed. This was possible “as a result of monetary unification, [where] the central government increasingly gained the ability to control and manipulate weight and purity standards across its far-
flung empire, either directly through imperial issues, or indirectly via local systems that were formally or de facto pegged to the central currency system”

**Historic Overview**

“From the mid-first century CE onwards, the imperial silver coinage underwent a gradually accelerating process of debasement and concurrent nominal overvaluation. Gold and base metal denominations were also affected to varying degrees. In 64 CE, Nero reduced the weight of the *aureus* to 1/45 of a pound (from 1/40), and that of the *denarius* to 1/96 pound (from 1/84), while the latter’s fineness dropped from 98 to 93%. This produced new (target) ratios of 10.9 to 1 for gold/silver (at 7.18g gold = 78.2g silver), compared to the previous ratio of 11.65 to 1 (at 8.08g gold = 94.2g silver).”

It is important to note that these variations did not cause any changes in the relation between the *denarius* and the *aureus*, since by changing both Nero “maintained approximately the same ratio between them, and the 25:1 relation remained unchanged.” The 25:1 ratio would remain the most important aspect, at least in terms of gold to silver, and subsequent emperors always made sure that whatever changes were conducted, that ratio must stay as it was. Nero’s reform was not the only one and later emperors would continue with their own, as “debasement of the silver standard proceeded in fits and starts…down to 80-89% under the early Flavians; restored to 98.5% in 82 CE but down to 93% in the following years; down to 89-90% under Trajan (98-117CE); on to 83-84% under Antoninus Pius (by 148 CE); and to less than 80% in 161 CE. Nominal silver/brass-copper ratios remained unchanged, but base metal coins likewise experienced significant debasement in the course of the second century CE; the *semis* and *quadrans* formats were discontinued; overall output was reduced; and the *sestertius* began to be made of (cheaper) bronze instead of brass; and adulterated with lead. Once again, this suggests that even at this stage, base metal coins did not constitute a genuine fiduciary currency: rather, their intrinsic value co-varied with that of the precious metal coins they were pegged to.”

A table of the fineness and weight of the *denarius* from 64-192 A.D. can be inferred from the following table (Table 2).
Table 2:

<table>
<thead>
<tr>
<th>Date</th>
<th>Weight</th>
<th>Purity</th>
<th>[Silver] Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-68</td>
<td>3.18 grs.</td>
<td>93.5%</td>
<td>2.97 grs.</td>
</tr>
<tr>
<td>70-81</td>
<td>3.22 grs.</td>
<td>90.0%</td>
<td>2.87 grs.</td>
</tr>
<tr>
<td>82-85</td>
<td>3.33 grs.</td>
<td>98.0%</td>
<td>3.26 grs.</td>
</tr>
<tr>
<td>85-107</td>
<td>3.27 grs.</td>
<td>93.5%</td>
<td>3.04 grs.</td>
</tr>
<tr>
<td>107-148</td>
<td>3.21 grs.</td>
<td>89.0%</td>
<td>2.88 grs.</td>
</tr>
<tr>
<td>148-161</td>
<td>3.23 grs.</td>
<td>83.5%</td>
<td>2.68 grs.</td>
</tr>
<tr>
<td>161-168</td>
<td>3.23 grs.</td>
<td>79.0%</td>
<td>2.57 grs.</td>
</tr>
<tr>
<td>168-170</td>
<td>3.24 grs.</td>
<td>82.0%</td>
<td>2.67 grs.</td>
</tr>
<tr>
<td>170-180</td>
<td>3.26 grs.</td>
<td>79.0%</td>
<td>2.57 grs.</td>
</tr>
<tr>
<td>180-185</td>
<td>3.07 grs.</td>
<td>76.0%</td>
<td>2.34 grs.</td>
</tr>
<tr>
<td>186-192</td>
<td>2.98 grs.</td>
<td>74.0%</td>
<td>2.22 grs.</td>
</tr>
</tbody>
</table>

**Non-Roman Currency within the Roman Empire**

The Roman currency, however, was not the only currency available within the Roman Empire. The local currencies which had been in use before the Romans conquered countries in the East, were still minted and used. After the conquests these were still emitted and pegged to the *denarius*. As such, in respect to any reforms in the Roman currency, the “provincial currencies were debased or re-tariffed accordingly. At the same time, a record number of cities produced bronze coins, rising from c150 under Augustus to c375 by c200 CE. Often consolidated in major workshops, output was huge: some 900 countermarks on civic base metal issues are known. In Egypt [for example], traditionally a separate currency zone, the local silver *tetradrachm* was gradually debased, from 3g of silver, or 23% fineness, under Claudius, to 2.2g of silver, or 16-17% fineness, in 58 CE, when existing coins were re-coined in vast numbers…Local drachms (by definition a silver coin) were now used bronze coins…Dealers discounted worn or otherwise underweight coins, and adjusted nominal exchange rates accordingly.”59

“In the Greek-speaking East, provincial and city mints struck traditional currency based on a silver *drachma*. Each *drachma* was divided into six *obols*; each *obol* was in turn divided into 8 *chalci*. The exchange was 1 *drachma* = 6 *obols* = 48 *chalci.*
1. ATTIC STANDARD, the international standard of the Greek world, based on a silver drachma of Athens that was equal to the Roman denarius. Greek authors cite large sums of money in Attic drachmae rather than Roman denarii or sestertii. The following silver denominations were minted in the Roman age:

\[
\begin{align*}
\text{Tetradrachma} & = 4 \text{ drachmae} \\
\text{Tridrachma} & = 3 \text{ drachmae} \\
\text{Didrachma} & = 2 \text{ drachmae} \\
\text{Drachma} & = 1 \text{ drachma} \\
\text{Hemidrachma} & = \frac{1}{2} \text{ drachma}
\end{align*}
\]

The Attic standard was used in Greece, Macedon, eastern and southern Asia Minor (Lycia, Cilicia, and Cappadocia), and the southern Levant (Phoenicia, Judaea, Arabia).

2. CISTOPHORIC STANDARD. This was based on a silver drachma that was only 75% the weight of the denarius; the standard was used in Crete, Rhodes, western Asia Minor (Asia, Bithynia, and Pamphylia), and in northern Syria (where it was called the Antiochene standard). The most famed silver coins of this standard were silver cistophori (= 3 denarii) struck by the Asian cities of Pergamum and Ephesus, and tetradrachmae (= 3 denarii) of Antioch in Syria. Fractional bronze coins were based on a bronze obol that was exchanged against 2 Roman asses (or assaria in Greek) so that bronze coins in this system were easily equated to Roman aes.

3. ALEXANDRINE STANDARD. This was the standard of Alexandria, capital of Egypt. Initially, the Romans employed Ptolemaic regal coins: the bronze obol and drachma, and low grade silver tetradrachma tariffed at 1.5 denarii. In 41/2 A.D. Claudius introduced tetradrachmae (four drachmae pieces) minted from billon, an alloy less than 25% silver, and equal to 1 silver denarius. Bronze fractions were based on the drachma and obol. Egyptian provincial coins were thus fiduciary[60] so that Roman authorities enforced them as the sole legal tender and excluded all other coins, especially gold and silver coins. The exchange was 1 billon tetradrachma = 4 bronze drachmae = 24 bronze obols. In Roman tax collection, premiums were charged on
payments in bronze so that the *tetradrachma* was often exchanged at rates of 25 to 29 *obols.*”

“Egypt operated a closed currency system based on base silver tetradrachms struck at Alexandria. Silver coins of the kinds used elsewhere in the Empire were certainly excluded from Egypt, and it remains doubtful whether the normal use of gold coin was permitted there.”

**Roman Money Supply**

**Introduction**

There is a general consensus among scholars that various currency reforms took place and that the effects upon the coinage are the ones summarized in the previous section. At the same time there is wide contention regarding the real reason behind these reforms. Before the answer to this can be discovered, there are other questions which need to be answered first, and these are: to what extent does the underlying price and availability of the metal of the specific denomination affect the currency; and, why was the Roman state minting coins in the first place - what was the purpose?

To answer the first question, it is clear that since the coinage was based on various metals, the supply of these metals was important for the minting of coins. One can hardly mint a gold coin if no gold is available. So in essence, according to Howgego, the “supply of money was dictated (a) by the availability of metals which could in principle be used as money, (b) by the extent to which such metals were in fact used as money, and (c) by how hard that money was made to work [i.e. velocity of circulation].” Each of these aspects will be have to be analysed.

**Availability of Metals**

(a) The gold and silver coins were the most crucial aspect of the Roman money supply due to their relative high value and the “quantity of these metals in the Roman world depended on three factors: first the gain or loss connected with conquest, booty, and external subsidies, second the balance of external trade in the metals in question, and
third the productivity of the mines.” A fourth point would be “the possibly significant rate at which existing...stocks may be diminished by accidental loss, unrecovered burials, abrasion, corrosion, and wastage in reworking.”

For the point of conquest and booty: “mass depredations came to an end with the relative stability achieved under Augustus. No doubt taxes and irregular exactions continued to dislodge stored up wealth, but the dramatic expansion of the supplies of gold and silver by conquest were over.” The exceptions to this were few, but a major one was during the reign of Trajan and his conquest of Dacia in 106 A.D., where the vast amounts of gold that were conquered caused a drop in the price of gold. Another example, from an internal origin, was the “sack of Jerusalem in A.D. 70 after the First Jewish Revolt [, where it] liberated so much gold that gold coin passed for half its usual value in terms of silver coin in Syria” Gifts and subsidies leaving the Roman Empire were few, basically none or negligible, especially in the time period under scrutiny and even though “outflows can be documented in the first century...evidence suggests a turn for the worse [only commencing] at the time of Marcus Aurelius.” It is only in the third century that these subsidy outflows reached significant levels.

The balance of external trade is a harder question to answer, and it will be examined in much more detail in the section on trade, but it suffices to note that the only trade which was of any significant importance to a possible outflow of precious metal, was trade with the East (India, China, Arabia, etc.). The negative balance of this trade, however, even though bemoaned by one or two ancient authors, did not have a strong enough impact to radically or dangerously deplete the coinage.

As for the productivity of mines, new “mining technologies and the more general application of existing techniques by the Romans made the impact of widespread exploitation all the more dramatic” and the “exploitation of mines continued to add to existing stocks, but we know of no important new mines exploited after the reign of Trajan, and some important existing mines did not recover from disruption under Marcus Aurelius or decline in the early third century.” Once again, it was only at the end of the 2nd century and the 3rd century that problems with the money supply were occurring. As such, the only - and also chief - way in which the money supply
could diminish was either by means of the fourth point mentioned above (abrasion, loss, etc.), and also as a result of an external trade imbalance with the Far East (this would refer mainly to the early Principate, as trade with the East declined during the 2nd century). 73

**Metals used as Currency**

b) To what extent mined metal was used to mint coins is unknown, and it is difficult to make good estimates. The output of certain mines can be attested to, but only for a small number, and how much of the mined output was actually used to create coins is unclear. Any “explanation of monetary history on the basis of metal supply must face the objection that it is not so much the total supply of metal, as that portion of it which came into the hands of the state, which was a relevant constraint on coinage output” 74 An example of non-coin usage is bullion and there “is, at least, evidence that there was a free market in gold and silver bullion.” 75

Nonetheless, “mining output had long been considerable. In the first century CE, the Baebelo mines in Spain produced 300 pounds of silver per day ‘for the state’ (i.e., possibly as the state’s share rather than gross yield), or 35.4 tons per year. The gold mines of Asturia netted 20,000 pounds, or 6.5 tons, per year, while Bosnian gold mines produced 50 pounds/day, or 5.9 tons per year. Subsequent operations in Dacia must have reached a similar scale.” 76 However, these values do not reveal much, since the existence of various gold and metal objects indicates that not all metal was used for the production of coinage. However, Walter Scheidel, for example, estimates that by the 2nd century A.D. “the Roman empire may have been able to put close to 1,000 tons of coined gold into circulation, as well as six times as much coined silver.” 77 Richard Duncan-Jones arrives at similar figures and “estimates that in the 160s CE, 120 million aurei (i.e., 880 tons of coined gold) and some 1.7 billion silver coins (i.e., 5,770 tons of coined silver), perhaps three-quarters of them Roman imperial issues, were in circulation.” 78 Bronze and copper denominations are estimated to consist of some 5-6 billion coins, which would mean, in essence, that gold accounted “for about 60% of the overall coin value, compared to 30-35% for silver and the remainder for base metal coins.” 79 Even though the main emphasis on the money supply is on silver and gold due to their relative worth, in truth the bronze and copper denominations were just as important, but in a different way. Bronze and
copper denominations were needed for small purchases: without them it would be impossible to conduct small market transactions. For example, even nowadays it would be difficult to purchase a CD which costs 9.99$ if the only denominations everybody had were 100$ bills. However, unlike silver and gold, copper was far more abundant so the supply was never in question.

Even though it is possible to estimate how much coinage was circulating in the economy, it is still not possible to gauge how much of the mining output went into the production of coins. However, for the sake of argument, we can pretend that the mines mentioned earlier produced the specified amounts for 100 years (since the values apply to the first century A.D.), and that all of this output went into the coinage. The values obtained would be 3540 tons of silver and 1240 tons of gold. This is naturally a very erroneous way of calculating, and it does not prove anything; however, it does show that the production of two gold mines and of one silver mine could have theoretically supplied almost the entire gold/silver coinage for the economy (especially in terms of relative value). The point which needs to be considered, is that there were more than three mines, not forgetting the famous silver mines in Rio Tinto and the Dacian gold mines. Theoretically, if in a time-span of 100 years, just three mines could supply almost all of the needed coinage for the Empire, the remaining mines could easily account for the yield needed for other uses of metal (bullion, jewellery, etc.), and for the coinage which was either being wasted or exported to the Far East, at least during the first century and until the second half of the 2nd century.

A last point to be considered is the ownership of mines, which, for example, Howgego mentions: “some time between the second century B.C. and the early Principate silver mines passed into private ownership, but the majority of gold mines remained state property. Under the Principate public or imperial ownership was resumed probably by a gradual process, although developments in this direction under Tiberius in particular were worthy of comment. Some gold and silver mines nevertheless continued in private ownership...Some at least of the state mines were leased out for exploitation by contractors, and the contractors naturally took their share.” Ultimately, the answer to be drawn from this, is that it does not matter whether the mines were in private or in state hands, but depending on the situation, the state was
certainly capable of acquiring the supply that it needed. For example, regulations “of the early second century A.D. from a mine in Portugal, which probably applied to all silver mines under state ownership at least in Spain, indicate that the imperial treasury retained to half of the ore extracted.” More evidence on the nature of mining will be outlined in the mining section.

**Velocity of Circulation**

c) The velocity of circulation is an even more difficult question to answer, especially since trying to measure it in context of the Roman Empire is nigh on impossible. It is hard enough to measure it for modern economies with abounding statistics available; one can only imagine how difficult it must be if no statistics are available. Ultimately, all that can be done is to examine various factors that could increase or decrease the velocity to ascertain if any of these would have had a significant impact. There have been attempts to do this; Duncan-Jones tried to measure the velocity by looking at coin wear, but as Howgego correctly noted, from an “economic point of view the velocity of circulation of coin is concerned with the number of transactions which take place, rather than with the extent to which coin was carried around. If coin is carried around but not used for exchange then it does not circulate; by contrast coin kept in a bank but transferred from one party to another does circulate.” It is such only truly possible at this moment to get a rough estimate, and no exact number can be discovered.

**Bullion**

In the first instance the question of bullion must be solved. While jewellery or similar ‘artistic’ metallic objects made of precious metals were not used as a means of payment, bullion could theoretically be used. In fact bullion “was naturally used as a store of wealth by the state. Indeed Pliny preserves some records of the metal bars stored in the treasury…the real question is to what extent bullion was used for expenditure” 84. Not only was the state capable of theoretically using bullion, private individuals could do so as well, but the “extent to which bullion was used by individuals is also rather obscure. It is clear that individuals could hold bullion not only from the presence in coin hoards of gold and silver ingots, but also from literary reference.” 85 The important conclusion to be drawn regarding the bullion question, is that during the Principate the use of bullion receded and eventually the “use of
uncoined gold or silver to make payments within the Empire was not in any sense a normal feature in the second century A.D., because Pausanias describes it as the ancient way of exchange, in specific contrast to the use of coinage.\textsuperscript{86} The focus then, is purely on coinage, since by the 2\textsuperscript{nd} century bullion was not used at all anymore, and according to basically all sources used in this paper (those which actually address the issue), the usage of bullion tends to be attested during the Republic, or only in the first decade or so of the Principate.

**Hoardi ng**

The second aspect which could cause problems for the velocity of circulation now that it is clear that coinage was the only means during the Principate with which to store wealth and to conduct purchases, is hoarding. Hans Kloft is convinced that the hoarding tendency was strong, and that by extensive hoarding, the amount of money in the market remained small and could therefore account for a momentary lack of coinage in specific moments. He bases his theory by examining Pompeii in 79 A.D., and by looking at the amount of money that was found among the populace. Sums to the amount of 30 *sesterces* were found most often on individuals, and sums gathered from houses lay between 1,000 and 10,000 *sesterces*. The villa of Boscoreale, however, held a sum of 1000 *aurei* (100,000 *sesterces*), but this was a very special case since this villa had a specialised production and was a ‘large’ profit-oriented agricultural business.\textsuperscript{87} Howegego gives additional information and writes that the analysis “of eighty four groups of coins, each worth more than 100 *sestertii*, from beneath the volcanic destruction of A.D. 79 shows that gold coinage represented about 70 per cent of the total by value.”\textsuperscript{88} Even though an in-depth analysis of wages and living standards will come in a later section, for now it is enough to keep a simple comparison to show that these amounts do not signify any significant hoarding mentality. The average pay for a basic legionary footsoldier from 84 A.D. was 1,200 *sestertii* per year\textsuperscript{89}, which is the equivalent to a value of approximately 3.3 *sestertii* per day. Therefore, the 30 *sestertii* found on individuals is the equivalent of 9 days pay for a basic Roman soldier: this can hardly be seen as a large amount. For example - even though comparisons of this kind are not entirely correct - but for purposes of simplicity nonetheless, the starting pay for an U.S. soldier in 2004 was $12,776\textsuperscript{90}. This is equivalent to approximately 35$ per day, and 9 days pay would amount to 315$. While few people run around with 300$ in their pockets, totals of
$100 can be expected to be found within wallets (even though nowadays we have credit/debit cards). As for the sums found in the houses, it is important to note that Pompeii was an area full of holiday villas, so in effect it was a city with many rich inhabitants, and it is not surprising that larger amounts were found. It is also erroneous to claim that all of these amounts were hoarded; most probably the majority of these amounts were kept at home for daily/monthly expenses. If a single person could easily live from 3 sestertii a day, it is therefore not surprising that larger houses, with various family members, slaves, servants, etc, would require more money for their daily life. True hoarding is when money is kept for ‘rainy’ days and instead of placing it in the bank, it is hidden, for example, beneath one’s bed. It is not considered to be hoarding when money is kept at home so that grocery bills can be paid tomorrow. This distinction has to be clear, and while most certainly some of the money found may have actually been hoarded, it is impossible to tell how much. In fact, it is seriously doubtful if a significant amount of the aforementioned values were actually truly hoarded. In conclusion, the velocity of circulation was probably not significantly negatively impacted by this, at least not during the first two centuries.

**Positive Influences on Velocity**

It should be clear now that during the Principate coinage was the main form of money, and that it circulated freely. Furthermore, it is evident that hoarding tendencies, while certainly existing to some extent, were not strong enough to significantly affect the money supply under normal circumstances. A few authors can certainly point to one or two periods of hoarding, especially during the civil wars, but one cannot use an exception to prove a point, and it is only natural that in times of great strife - like a civil war - people would try to hide their money for later use. As such, it is now important to look at the possible positive influences and aides which could increase the velocity of circulation, in order to make a correct judgement.

The most logical way to circulate money is through trade, and the more extensive, quicker and sophisticated trade was, the more the money there would be in circulation. Trade will be examined in greater detail in a later section, but for purposes of circulation through trade, it suffices to say that trade carried out by the Roman Empire was extremely extensive and far-ranging. Roman coins have been found all over northern Europe, Africa, the Middle East, India, and China. Trade
levels of such magnitude from the areas of the Roman Empire have most probably not been reached until early modern times, or at least not until colonial times, especially in per capita. External trade, however, was only a minor aspect of Roman trade: trade was mostly conducted internally, once again most probably not reached until colonial times or early modern times in per capita. It suffices to say that trade was as advanced and intensive as it could have been for a pre-industrialized country which spread over the entire Mediterranean and most of Western Europe. The exact details will be covered in a later section.

The second aspect that affects the velocity of money is monetary credit and in general, the various aspects of banking. “Monetary credit is relevant to velocity of circulation because it enabled one man’s store of wealth to be used by another as a means of exchange. Loans quite simply got coins back into circulation, but other forms of monetary credit had the same effect. For example purchases on credit could allow many monetary transactions to take place with little actual use of coin, and rent arrears permitted a tenant to continue to use wealth which belonged to the landlord.”

Much like trade, this aspect will be explored in greater detail later, but since most attempts to calculate any economic values for the Roman Empire are extremely difficult, it is nigh on impossible to give any quantitative estimates of monetary credit, so a general idea will have to suffice. It is very clear from all sources that debt existed and that money was loaned out. In fact, money-lending was perceived as the second most important form of ‘investment’ after land. As such, on average, if no land was available, or if it was not a good investment, the Romans would try to lend their money. This was a big business and it was conducted by all strata within the economy. The rich were especially known for both granting and receiving large loans, especially between each other - “monetary debt was a systematic part of aristocratic life…By the same token aristocrats could be significant lenders.”

It was not only the rich who loaned their money: credit was bountiful and wide-ranging, and this was “indicated by the variety of sources for loans and the sophistication of their forms. Depending upon the client and his needs, credit could be obtained from aristocratic financiers, from the publicani [corporations], from entrepreneurs, from the state (at least in Egypt), from civic treasuries, from temple funds, from foundations, from bankers, from money-lending partnerships, from loan
clubs, from pawn-brokers, from loan sharks, and from other individuals who might lend occasionally. Money-lending was sufficiently widespread for it to be a requirement to declare money out on loan in the census. In addition to advances of money, credit was to be had in shops. In the finance of overseas trade maritime credit continued to play its part alongside mutual associations (societates). Money loans or arrears are attested in rural areas in Italy and in some provinces. Rural debt in money, as well as in kind, was surely ubiquitous.” Furthermore, this readily infers that money-lending was also available to all strata of the Empire, which can also be measured by the extent of “the social advancement of some professional bankers. The bankers, who were predominantly freedmen, were able to purchase property from their earnings. Some reached the highest honours normally available to freedmen other than the richest of imperial secretaries. This was possible despite the fact that for the most purposes bankers were not used by the elite, whose requirements ran beyond the means of individual bankers, and who relied upon their social peers when in need. The betterment of professional bankers was thus in part a reflection of the use of credit by the likes of wholesale merchants, artisans, shopkeepers, and property owners below the elite.” Another example of a Roman method which was used to increase the velocity of circulation was the usage of bankers in auctions. “From the second half of the second century B.C. bankers (first argentarii, then coactores argentarii) began to intervene in auctions to pay the vendor and provide credit to the purchaser. Both by the provision of credit and by the removal of any uncertainty about whether the purchaser could pay, this intervention allowed people to buy and sell at auctions who could not otherwise have participated so easily. It is reasonable to infer that the number of transactions was thereby increased, and that the velocity of circulation became greater.”

It should by now be clear that the Roman credit system was significantly advanced and that developments “in financial structures, such as the spread of banks or the intervention of bankers in auctions, may well have been as much responses to increases in the use of coin as agents of change in themselves. Either way they serve to indicate that the velocity of circulation is likely to have increased.” As a concluding remark, one only needs to look at the findings of Peter Temin to get a good idea of the financial intermediation of the Roman Empire. Temin wrote: “The surprising result is that financial institutions in the early Roman Empire were better
than those of 18\textsuperscript{th} century France and not too far from those of the 18\textsuperscript{th} century England and Holland.”\textsuperscript{97} Once again, the sheer magnitude and sophistication of the Roman Empire is brought to the forefront: in essence, this underlines the fact that it took the Western world at least 1,500 years to reach similar levels of sophistication in the field of financial intermediation, and that this certainly is an incredible amount of time.

\textbf{Conclusion for Roman Money Supply}

To conclude this section, it should be clear that the Roman economy had a sufficient supply of money for its general purposes. The Roman Empire had a sufficient amount of mines which produced enough metals to counteract any losses, be it through usage, hoarding, or exporting. The currency was also capable of circulating to a sufficient degree, irrespective what strata was involved. There seems to be no or little indication that there would have been problems with money supply or circulation until the 3\textsuperscript{rd} century. At this point, various scholars would possibly disagree with the general assessment just made, and might highlight various moments during Roman history when there was a shortage of money. They might mention the years of 49 B.C. or 33 A.D., when there were actually shortages of money in Rome, and they might even possibly mention a half dozen more instances in some cities spread over the Empire which experienced shortages at some point in time, but it is uncertain whether or not these were related. However, this does not prove that there was a lack of supply, but in truth that there was a ‘sufficient’ supply. First of all, the fact that these cases are noted and notorious, tends to suggest that a city did not run out of currency often: if there was a constant under-supply, there is much doubt that ancient authors would have focused so often on those few instances when it actually did occur. Secondly, when it did occur, it tended to hit only one city, and not the entire Empire. What is one city in the context of the large geographic area of the entire Empire? Even if Rome suffered from an under-supply, it would still not signify that the entire Roman Empire was undersupplied, as Rome at best constituted 2% of the population (but it would have by far had the highest requirement for cash). Thirdly, these occasions were usually caused by some prevailing and underlying economic problem, which in all these cases, were eventually solved: in effect, these were only momentary ‘gluts’. Fourth, if for a time-span of 200 years, one could identify a
maximum of 5-10 occasions where for various reasons a specific city in the Empire experienced a momentary lack of currency, it would signify on average one glut every 20-40 years in only one city. Looking at the past 200 years and taking even the most advanced nations in the world - especially the ‘developing’ nations, like for example in South America - one can hardly claim that it was much different during the Roman Empire. Theoretically even in the 21st century for example, if, due to a crisis of some kind, the entire population of a city numbering one million (like Ancient Rome), decided to run to the banks and ask for their complete savings in cash, one can be assured that there would be a lack of cash available in that city. The fact that a glut happened approximately only every 20 years, is astounding. This is especially true when one takes into consideration the fact that the Roman Empire had no telephones, no internet, no way of immediately passing on information, and no quick way of transporting extra ‘cash’ from other areas. Too many authors seem to forget that momentary problems of money supply still do occur nowadays, but that with today’s communication technology it is easier to notice them before they become a great problem, and that we are able to react to them much more quickly. One can definitely not fault the Romans in that regard.

**The Relative Value of Roman Money**

**Introduction**

The last aspect of the money supply that has to be covered is the relative value of money. In essence, since the coinage was based on a metal, the price of the metal would affect the true value of the coins. For example, if the gold price would increase relative to the value of other metals, the gold coins would then be worth more as well - at least in theory. A historic overview of coinage during the Roman Empire suggests that the state kept the relative values between the various coins constant, which signifies that the state was somehow able to counteract the effects of changes in metal supply since the ratio would have been under constant pressure to change. Possible ways in which the state was capable of achieving this were (a) by controlling the supply of gold and silver (both the minting and raw amounts), (b) by a shift to ‘incomplete bimetallism’, for example by debasement of one of them (in truth only done to the *denarius*), and (c) by adjusting the weight and fineness of one, or both, as
deemed necessary. Indeed, the fact that the Romans were capable of maintaining the ratio between the coins heavily suggests that they were definitely aware that the price for a metal could change when sudden large amounts of a precious metal were made available (or taken away). 98

The first technique (a) was easy to attain because the state owned (or controlled) a large part of the gold and silver mines by the time of Tiberius. The second technique (b) also seems to have been used, as the face value of the silver coin did not always correspond to the intrinsic value. However, it seems that the gold coin was always minted at full value. Vespasian for example, increased the proportion of base metals in the denarius, but what makes this interesting is that within the same issue, the coins had varying degrees of silver percentage - some more, some less. According to Lo Cascio, the motive seems to be that Vespasian was short of money, and he exploited the confidence in the coins in order to increase the money supply. The third technique (c) was often used and it was very successful.

Reasoning Behind Debasements

It is important at this point to note, however, that not all debasements occurred due to financial distress. For example, in 107 A.D. after the Dacian conquest, lots of booty reached Rome, and together with the exploitation of rich gold mines, this caused a needed debasement in the silver coinage due to a sudden increase in the gold supply. In essence, the price of gold had decreased in relation to silver due to this additional supply. If the state then wished to keep that 25:1 ratio between gold and silver coins, it had to either increase the weight of the gold piece, or it could lower the weight and/or fineness of the silver coin. The state opted for the option to lower the fineness of the silver coin, thereby keeping the ratio intact. This meant that the state commenced a strong minting process to churn out the ‘new’ types of coins, which also meant that after 106 A.D. public expenditure was exceptionally high. Other examples which did not involve financial distress, are the debasements of 148 and 161 A.D. According to Lo Cascio, the 161 debasement was due to the reserves of 675 million denarii left by Antoninus Pius. 99

On the other hand, there were also attempts to reverse the process of the silver coinage debasement, which occurred for example, under Domitian. 100 After
Vespasian had lowered the fineness of the silver coin to approximately 90%, for a short period (81 A.D.) at the onset of his reign Domitian raised it to 98%, and then lowered it later to 93.5% (which is what it had been before Vespasian lowered the fineness). The fact that Domitian was able to raise the fineness not only to pre-Vespasian standards, but for a short period of 3-4 years above the standards of Vespasian, strongly suggests that the monetary system was ‘healthy’: otherwise Domitian would not have been capable of doing this. As already mentioned, Lo Cascio claimed that Vespasian was short of money, and in the first instance one questions how a healthy monetary system can be short of money. The answer is very simple: after Nero was killed in 68 A.D. a civil war broke out in the Empire which lasted from June of 68 to December of 69, which is known as ‘the year of the four emperors’ (with Vespasian being the fourth). Even though it was relatively brief, a civil war of such magnitude which yielded four emperors in one and a half years certainly caused a lot of damage. Once Vespasian came to power and the civil war had ceased, he had to rebuild what had been destroyed and damaged during the war. It is therefore not surprising that he needed a lot of cash, and the quickest and easiest way to achieve this, was to mint more coins thereby increasing the money supply. This same measure was used throughout the 20th century by various nations, especially those hit hardest by the World Wars. The best and most notorious example is Germany and its attempts to pay off its reparations after World War I. By using this measure (among others) Vespasian was able to ‘sanitize’ the economy and get the economy running again, and as such it comes as no surprise that Domitian in 82 A.D. was able to raise the fineness again, since the problems had been solved. This meant that the economy was running smoothly again, and that the interruption and damage from the civil war had been ‘repaired’.

It should be clear now why the Roman state conducted debasements, changes in fineness, and changes in weight of the various coins. The main goal was to always keep the relative value between the coins stable, and since the coins were based on a metal, any larger changes in the relative price of the metals had to then be accompanied by some change in the currency. The question which arises from this action, however, is what happened in the monetary system according to usage of the various coins? In essence, there were various coins circulating in the system which had the same face value, but which did not have the same true value. For example, a
silver coin of 98% fineness could be circulating at the same time as a coin with 90% fineness. While there is certainly evidence that the state re-minted older coins into the newer forms, this would take some time to complete and some coins could theoretically be circulating for decades before they were re-minted. How these coins were perceived and used by the population needs to be examined, but before this commences, another aspect has to be explored: the state’s minting process, and the perceived costs/income of this.

Perception of Value

Introduction

It is truly only in the state’s interest to mint coins and emit them into the economy at a specific state-backed value, if that value lies above or just at the value of the base metal (accounting for mint costs). In other words, the state would lose ‘money’ if it minted, for example, expensive gold coins and put them into the system below their real worth. On the other hand, the state in essence can ‘earn’ from minting these gold coins if the value it backs is over the real value of the gold coin. The danger is of course that the population refuses to accept the coin if this state-backed face value is deemed too high in relation to the real value of the base metal. However, one way to possibly combat this problem is by having sole mint rights (which the state did have) and by somehow also controlling the bullion market. Whatever the case may be, De Cecco concludes that “the fiscal function that coinage performs in the Roman economic system through the permanent overvaluation of Roman currency and the recurrent debasing of the same are seen…as a condition which does not lead to inevitable ruin. If well managed, it can last indefinitely and constitute the very essence of ancient economic policy, one instrument of ancient statecraft.”

Crawford adds on to this and writes: “It is also significant that, although ancient coinage never freed itself from its dependence on its metallic content, quite wide variations in weight were tolerated before the face value was affected. Worn coins were normally hoarded as readily as fresh ones and it was held against Nero, presumably as being something exceptional, that he demanded nummum asperum, fresh coin.” The general conclusion is that there was some leeway in the true value of the coinage, but that most coins were accepted at face value. In this way, the coinage had some elements of a fiduciary system, but only to a certain extent. The
faith in the coinage extended only as far as the true value and the face value were not too far apart. For example, at a certain point when the *denarius* had been extremely debased, the population preferred older silver coins with a much higher silver content. This problem, however, appeared later in the Principate (end of 2\(^{nd}\) century and definitely in the 3\(^{rd}\) century), and for the majority of the time - within the time-frame of this essay - there does not seem to be any indication of a general lack of faith in the coinage. De Cecco refers to other opinions and writes that “Claude Nicolet’s review of Roman economic thought, still expresses the conviction that Roman money was mostly accepted at its metallic content, in spite of Bolin’s efforts to prove the opposite and in spite of the whole corpus of Roman legal evidence.”\(^{103}\)

**Counter-Example**

A counter-example, seemingly displaying a tendency to prefer higher fineness or heavier coins of the same face value, can be inferred from Hans Kloft who mentions that the people in Pompeii seemed to hoard the Republican *denarius* since they were heavier than the silver coins of later times. In the same instance, however, Kloft does mention that ‘newer’ silver coins were also attested in these hoards. As such, it would seem that the small majority of the coins found in these ‘hoards’ would have been from Republican days. According to him, there seems to have been a similar propensity to hoard gold, especially gold coins which dated from the period before Nero had lowered their weight from 7.8 to 7.3g.\(^{104}\) In the first instance these findings seem to contradict the theory that the population accepted the coin at face value, but by examining the matter in greater detail it should become obvious that it did not. The first question to be asked, is why the population would have preferred to hoard these ‘older’ coins in the first place? What benefit would they gain from this? The only reason that they might choose to do this, was so that they could get more value from the older coins than from the newer coins. This is where the problem lies, for the market would have accepted the coins at face value and not at the true value of the base metal in the coin. There seems to be no indication in any source used in this thesis, even among the most ardent primitivists, that the market would accept the coins for their metallic content and not for their face value. The face value was set legally, and it would make no sense for anybody in the market to accept more than the face value. As has already been mentioned, there seemed to be no great lack of faith in the coinage until the 3\(^{rd}\) century, and the cataclysm at Pompeii occurred in 79 A.D.,
well over 100 years before any real problems with the coinage occurred. By accepting the true value and not the face value, anybody in the market would run the risk of someone else later refusing to do the same, thereby actually making a loss not a gain. This would signify that the only way this can function is if there was a very strong and large black market for older coins, however, absolutely no source seems to even indicate such a possibility. If there was no black market for older coins that was significantly large enough, the only other option is to melt down these coins in order to re-mint them according to new values (theoretically thereby making a small gain). The first problem with this idea, is that only the state was able to mint coins: obviously, this could not have been done. Another option is to melt the coins down into the form of bullion. However, even this would not have worked because first of all, bullion was no longer used to conduct any purchases (this is proven at the beginning of this section), and secondly, it has already been shown that the coinage was most probably slightly ‘overvalued’ (or at least as much to counteract minting costs). Consequently, melting down coinage into bullion would not really increase its value. The best proof of non-melting down, is the fact that coins, and not bullion, were hoarded: no sources seem to imply or mention that bullion was being hoarded during the Principate (only in the Republic and perhaps slightly at the very onset of the Principate). There definitely seems to be no reason why people would hoard older coins, if they could not use this ‘perceived’ higher value which Kloft believes they had by hoarding these coins.

Yet, even if for the sake of argument, one accepts that there was a very lively black market, the first question would be, is how would the average person even know if a coin has 90% fineness or 93%, or a coin is 3.4g or 3.0g? These differences are so small and negligible that even if people were informed, what difference would it make? If, for example, a comparison of the denarius of 3.8g weight and 100% fineness, with Nero’s denarius of 3.18g with 93.5% fineness (signifying a true silver content of 3.0g), was made, what would the outcome be? What would this difference of 0.8g theoretically be able to get in terms of price for the base metals? The lowest denomination, a quadrans, was 1/64 of a denarius, therefore, if a 3.0g silver coin would be the equivalent of 64 quadrans, a ‘3.8g’ silver coin could would be the equivalent of 81 quadrans (this is purely theoretical, since the legal relation would always be 1/64, irrespective of the true silver content). This means a difference of 17
quadrans per silver coin. In terms of gold, and considering the difference from 7.8g to 7.3g, one would theoretically get 110 quadrans more per heavier coin. Taking Kloft’s example, it would actually signify that one would be better off hoarding equivalent silver coins over gold coins, since the relation of gold to silver was 25:1. One old-to-new gold piece provides 110 quadrans extra, while 25 denarii provides 425 quadrans extra. Yet, as mentioned earlier, 70% of the value of the hoards above 100 sestertii were in gold coinage, not silver. So if the purpose of ‘hoarding’ placed importance on true value and making a ‘profit’, why not hoard purely in silver? For a good profit to be made, only silver coins should be hoarded. This not only makes sense when deduced from these calculations, but also by looking at the history of the Principate, it is evident that silver supply decreased far more rapidly in relation to gold supply. Silver was therefore becoming more expensive in relation to gold (in total terms gold was naturally still more expensive, but the difference between the two was decreasing). This can be easily inferred from the relation change between the two, in terms of base metal by 64 A.D. The old ratio of gold to silver was 11.65:1, which then dropped to 10.9:1, clearly demonstrating how silver had gained in value in comparison to gold. This makes it evident that there was no sense in hoarding gold for the purpose of making a ‘profit’, and yet gold was the main medium.

Exploration of Relative Value

It should be clear by now that the ‘little’ hoarding there was, was not conducted due to a perceived ‘true’ value of the underlying metal in the coins, rather, it was carried out for reasons of simplicity. It is easier to hide 10 gold pieces than 250 silver. This also ties into the earlier section about velocity and hoarding, in that hoarding would not have damaged the circulation, since very few ordinary every-day payments were conducted in gold. Keeping gold at home would not cause problems in the market. However, the question of why older coins were found in Pompeii still needs to be answered, and the answer seems to be a very simple one. In respect to gold coins, one needs to remember two things. The first is that the gold reform was introduced by Nero in 64 A.D., and the second, is that Pompeii was buried in 79 A.D. The new type of gold pieces had therefore only been minted and in existence for 15 years, while the previous type had been in existence since Augustus. If one type of gold piece has been minted for over 70 or so years and other types have only been minted for 15 years, what type of coin is one likely to come across more of on average? It is not
hard to imagine that there were simply more of the older coins in circulation than there were newer coins, even accounting for re-minting and losses, so it is not too difficult to envision that the majority of gold coins found in Pompeii would be those which were dated before the reform.

The silver coin question is harder to answer. Hopkins claims that some 500 million *denarii* had been emitted in the Republic by 50 B.C.\(^\text{105}\) As mentioned earlier, Richard Duncan-Jones estimated some 1.7 billion silver *denarii* were in circulation by 160 A.D. This means an increase of 1.2 billion from 50 B.C. to 160 A.D. Even though emissions were not equal during the years, and there was definitely some re-minting in addition to losses, for reasons of simplicity this would signify that in 79 A.D. there should have been approximately 1.2 billion *denarii* in circulation. Staying with simple calculations, this would mean that about 500 million of these would be old Republican coins, while 700 would be post-Republican coins (in truth, there probably would have been fewer Republican coins). Unlike the gold coin example, the question of why the majority of the hoards had Republican coins is still open, as in this case they do not represent the majority of coins in circulation. Kloft certainly did mention that the disparity was not as evident as it is with regard to gold coins; however, that there were still more Republican coins in circulation than there were not. The only possible explanation, which, incidentally, is an exception that will serve to prove a point, is that for a brief moment there might actually have been a loss of faith in coinage (specifically in silver), or at least, the onset of a loss of faith. 79 A.D. was only 10 years after the civil war, and in an effort to sanitize the economy (as mentioned earlier) Vespasian had increased the money supply massively. Lo Cascio, to that extent, mentions that there seems to have been some dissatisfaction with the new silver coinage that Vespasian was pumping into the economy.\(^\text{106}\) Since the silver content had been reduced in an effort to increase the money supply, there might certainly have been a small loss of faith in the newer silver coins (not to mention the effect of a sudden increase of general money supply). Perhaps the population was slightly careful about the newer silver coinage, seeing what Vespasian was doing. Unlike other silver coin emissions, which were generally more commonly tied to the relative value between gold and silver, this emission was tied in connection with increasing the money supply to get the economy running again. It would come as no surprise that the population would be wary. This, however, shows that for the other
debasements, where it was tied to the relative gold and silver price, there should not have been any loss of faith. In essence, the preference which people had for the older silver coin, was - while certainly noticeable - not of any great significance, since only a small majority of the silver coins were Republican, and 70% of the values hoarded were in gold. This shows that even after a civil war, and the ensuing debasements and minting of coinage to pay for ‘damages’, the population was still generally more than willing to accept the face value of the coinage. This leads to the assumption that to a certain extent the currency was a fiduciary system; however, it seems this is true only insofar as the population believed the value of the currency did not deviate too much from the value of the base metals and their relation.

**Exchange Rates Among Denominations**

However, does this mean that Roman currency was equally accepted in all regions of the Empire at face value, especially when dealing with exchange rates among the various denominations? De Cecco claims that in “spite of attempts on the part of Roman legislators, variable exchange rates existed among Roman coins”¹⁰⁷ Does this necessarily signify that the Roman state was incapable of backing its legal values? Crawford, for example, mentions that at “Cibyra in A.D. 74 the denarius was worth 16 asses, the official rate; at Ephesus and Pergamum in the early second century A.D. it was worth 18 asses; while on Syros in the late second century A.D. it was worth 16 asses again. The range of variation in Egypt was about the same. One of the Transylvanian tablets recording the adventures of the money-lending business…mentions a penalty for fraud of one denarius per as, twenty denarii per denarius. The implication is that the denarius was here worth 20 asses. Another Transylvanian tablet records payments actually made in denarii, half-denarii, twelfth-denarii and twenty-fourth-denarii. The denarius must here have been reckoned as 12 or 24 asses, surely the latter.”¹⁰⁸ Even though Crawford’s findings regarding the Transylvanian tablets are open to interpretation (as it refers to penalties and not exchange rates), there certainly does seem to be a problem with the exchange rate between the denominations. To answer this conundrum, in the first instance, one needs to be aware that the money changers did not work for free: they had to be paid to exchange money, much like they do nowadays when dealing with foreign exchanges. As such, for some examples in the various sources, care needs to be taken to make sure the mentioned values do not also contain the fee for exchange.¹⁰⁹ More
importantly, a slight variation between exchange rates of denominations is not so peculiar, if one expands upon the idea. For example, De Cecco mentions that a “differential between the rate of exchange of different monetary instruments in different parts of the same monetary area exists even today [1985], in very developed countries. Given the specialized functions of the various instruments in the monetary system, it is altogether possible that demand and supply conditions for each of them may not be the same everywhere in the monetary area. The instrument used for saving [gold for example] may be in great demand in a high saving part of the country, while the instrument used for paying the poor maybe be in great demand, and in short supply, in parts of the area where many payments of that kind take place. In developed countries today, there are regions where the interest rate banks pay on deposits is much higher than elsewhere, or much lower than elsewhere. The differentials persist despite excellent communications because of market imperfections and segmentation, and in spite of the activity of central banks and other monetary authorities.” In essence, acknowledging that market imperfections existed in 1985, taking into account all of the technological advances in comparison with those of the Roman Empire, one can definitely expect to find market imperfections in antiquity. “It would be fairer, however to compare conditions in the Roman Empire to those prevailing in the last quarter of the nineteenth century…in spite of the presence of British India of an administration of exceptional economic sophistication, the phenomena that Crawford notices in the Roman Empire with reference to the money market, all existed, and persisted.” Further expanding upon De Cecco’s idea, and the knowledge that money changers were officially backed by the state, it becomes clear that they were indeed one possible method of controlling the money supply of the Roman Empire. By being able to slightly raise or lower the ‘cost’ of various denominations, they could, to a certain extent, control the demand and supply of multiple denominations in that one specific area where they worked. This was not perfect control and naturally there was also a slowness of information exchange, not to mention market imperfections; however, it allowed the state and the money-changers which the state backed, to keep an eye on the money supply and to be aware of the underlying conditions. It is certainly possible that this was one way that the state kept itself informed of the money supply and that is was able, under normal circumstances, to be aware of changes in demand for the various denominations, and to react accordingly.
Currency & Monetization

Introduction

Even though there should be clarity about the nature of the currency and its status within the economy, for example in terms of velocity, hoarding, monetization, etc. it becomes clear when reading various sources that this is not the case. In an effort for the examination not to be of an equivocal nature, it becomes necessary to examine various findings by multiple authors in an effort to clarify why the points mentioned in earlier sections can be ascribed considerable merit. As such, this section will display various findings in juxtaposition to each other, to show that the ‘discoveries’ mentioned up until this point in this paper are most certainly valid.

One of the stronger counter-theories to a great monetization of the economy, comes from Michael Crawford, who writes “If, therefore, the use of coined money as a means of exchange was largely limited to the cities of the Empire, its use there was probably an accidental consequence of its existence and not the result of government policy. Certainly a city did not need coined money, as the history of Babylon and other Eastern cities shows. The view that the cities of the Roman Empire came only by accident to adopt coined money as their means of exchange is corroborated by the absence of government reaction to the forms and structures individually created.”

Beyond his claim that coined money was almost ‘mainly’ used in cities and not in rural areas, he also opens up a debate about whether the government had any monetary policies, and how coinage came to be used in the cities. The question of government policies and involvement will be examined in a later section, but for now it is enough to point out that it is absolutely not important whether the government actually wanted to use currency or not. The question that needs to be asked instead, is did it use coinage, and how extensive was this use throughout the Empire. Crawford’s attempt to disprove the existence of a fully monetized system by claiming that the government had not planned such a system, but that it happened ‘accidentally’, actually proves that there was a system. So why is it then important to know ‘why’ such a system came into existence? As long as the monetary system was in place and functioned, there is no need to be concerned with how and when it came
into existence. If Crawford wished to discover the reasons for using currency in a historic context, he should have examined the periods far before the Roman Empire, because currency had been in existence for centuries before the ‘living’ days of Romulus and Remus (some 700 years before the Roman Empire). The Romans merely adopted and adapted what they saw existed around them, especially from the Greeks.

**Monetization in Cities**

Crawford’s other point, concerning the usage of currency as being “largely limited to the cities”\(^{113}\) is not entirely clear either, since pure logic dictates that the cities naturally would have had the most usage and largest amount of coined money. The cities would have had a much higher purchasing power and a larger concentration of people in a small area, so naturally people in cities could and would accumulate more money\(^{114}\). This is more than self-evident, and it is why increased urbanization is a large factor of increasing wealth. This fact has not changed in modernity either: looking at cash available on hand, the urban areas would definitely have had more of it than the rural areas, which is true even nowadays (in relative terms). For example, Howgego, in contrast, writes that the “difference between town and country may be that there was a seasonality in the flows of substantial sums of money in agricultural communities, with rents and debts being paid after the harvest, but the close economic interaction between town or village and agricultural land implies that smaller transactions were regular.”\(^{115}\) To clear this question, one has to look at Crawford’s supporting facts.

Some of his points to support his theory are: “taken as a whole, the coin finds from Pompeii show a far greater proportion of bronze coins, particularly bronze fractional coins, than is to be found in the Italian hoard material of the first century A.D. and it is legitimate to conclude that we have a record of the money circulating in Pompeii in A.D. 79...If bronze coins and particularly bronze fractional coins are presented in large numbers we can argue that coinage played there a significant role as a means of exchange.”\(^{116}\) and “But in Italy the wide range of denominations down to the smallest, which are the most important feature of site-finds, do also occur in hoards. Although their occurrence in hoards is not as compelling evidence as their occurrence in site-finds, we may argue that, unless an area shows at least some hoards including small
denominations of bronze, its use of money differed markedly from that of Pompeii and the other cities of the Empire.” In essence, besides showing how Pompeii was monetized, he also seems to claim that Pompeii was an exception regarding its high level of monetization, because the bronze coins found there were more numerous than in any other find.

Monetization Theory Problems

The first problem with such a statement is that besides Pompeii and Herculaneum, no other cities were completely buried by a volcano and could remain as a ‘time capsule’ like those two. Even other better-preserved old Roman cities like Dura-Europos in Syria are not as well preserved as Pompeii is. Pompeii was covered by many meters of ash, so one is able to construct a very good idea of what life was like, exactly at the moment the volcano covered the city. All other locations would have had nearly two millennia of comings and goings, easily ‘corrupting’ any finds made in modernity. Instead of seeing Pompeii as an exception, it should be more realistic to judge it as an excellent example of a Roman city in Italy during that time. It comes then as no surprise that no other site or any hoard shows the amount and variety of currency that Pompeii attests.

The second problem is Crawford’s focus on bronze denominations. As mentioned earlier in this paper, if someone would want to hoard, it would be in gold or generally higher worth denominations, due to the ease and less need for space. By examining hoards and not finding ‘enough’ lower denominations, signifies nothing special - on the contrary, this would be expected. De Cecco explains it best, by saying that large “denomination instruments are used for storing wealth in the countryside and among the poor even today [1985].” As such, any hoard which does not have any low denominations cannot be immediately used as proof of poor monetization.

A third area of contention comes from a separate study mentioned by Richard Reece, who examines various coin-finds (not necessarily hoards) from various locations in, and years during, the Empire. Reece writes; “But as already mentioned, the commonest coin on sites early in the first century is the as, around 100[AD], the sestertius, and after 200[AD] the denarius. Under the emperor Claudius (41-54) there are far more asses found than sestertii and far more sestertii than denarii. This is as it should be if value were the determining factor in loss. [However,] Under Hadrian
(117-128), more *sestertii* are found than either *asses* or *denarii*, though a few sites even show losses of more *denarii* than any other coins."\textsuperscript{120} This confusion as to why a lower denomination was lost less than a higher denomination will be explained, but before that is done, in relation to Reece’s quote, Crawford discovers something similar and writes that “in Belgium. Of 26 hoards datable to the first two centuries A.D. not one contains a denomination of any period smaller than the as. For Germany we have the evidence of hoards and of site-finds and it is noticeable that the availability of small denominations contrasts unfavourably with the position in, for instance, Pompeii or Dura-Europos…So it if is true that denominations smaller than the as were scarce in the Northern provinces it seems to follow that coinage was little used there as means of exchange.”\textsuperscript{121} Reece certainly seems to discover a similar higher degree of monetization in Italy as well, and concludes the “fact that the small change seems to stay mainly in the central provinces of the empire, for the coins are better represented in Italian finds than in finds from France, and in Britain they are very rare indeed.”\textsuperscript{122} In the first instance the two authors seem to agree, at least in respect to the higher monetization of Italy. This cannot be a great surprise as Italy was more sophisticated financially and economically than many other regions in the Empire. Many regions, especially in the West, before the Romans conquered them, were ‘lagging’ behind in sophistication: it is possible even today to find various levels of financial strength and sophistication in the different regions of a single country. One cannot expect equal monetization and equal sophistication uniformly and unilaterally across the entire Empire, especially in the ‘newer’ provinces. Howgego explains it best and writes; “It is presumably not contentious that the degree to which coin was used may have varied between different provinces and different periods. The world into which Rome expanded embraced peoples in different stages of social and political development…It looks as though the production of coinage and the subsequent introduction of small denominations are indicative of stages in the development of towns.”\textsuperscript{123} However, just because Italy was more monetized does not automatically mean, like Crawford is trying to say, that coinage was little used in those provinces of less monetization. What it does say is that the market in Italy was far more sophisticated and ‘larger’(in relative terms) than in the less monetized provinces, it does not signify necessarily that the less monetized provinces conducted barter exchanges. Unlike Crawford, Reece is much more careful about making any great theories about the monetization from coin finds. Reece explains that larger
discrepancies in the findings do not necessarily signify much, since coin losses cannot
tell the entire story of how an economy was monetized, but can only give a rough
idea. His findings, however, show a much more ‘logical’ pattern than Crawford’s, at
least in terms of relative worth of coins found. For example, Reece correctly does not
even ‘bother’ to look for *semis* or *quadrans* like Crawford does, because both of these
denominations had already been discontinued by the time of Hadrian and Antoninus
Pius\(^{124}\), and it’s highly doubtful that right up to that point they were being minted at
full power either. It is then not clear why or how Crawford is able to make any
judgements about the exchanges in the Northern provinces by searching for
discontinued denominations. These coins were discontinued for the simple reason
that they were not needed anymore; why the Northern provinces would bother to
hoard a coin which is discontinued and made of copper is certainly not
comprehensible, easily disproving Crawford’s theory. The truth must lie in a different
direction, and for that, the reasoning behind the discontinuation must be examined,
and Reece’s findings, though not proving, ascertain that the economy of the empire
must have had a slight inflation throughout its existence.

**Monetization & Inflation**

Even though inflation will be examined in greater detail in a later section, taking the
example of the types of coins found and their relative number is enough to show how
prices may have generally increased over time. Generally speaking, asses were most
often ‘lost’ until about 100 A.D. then the *sestertius* was most often lost, and then it
seems that towards the end of Hadrian’s reign, the *denarius* was closing in on the
*sestertius* in terms of losses. The strange occurrence, according to Reece, is that
during Hadrian’s time, more *sestertii* were lost in comparison to asses. Why would a
coin worth more be lost more often than a coin that is worth less? Logically, it should
be always the lower-worth coin that is lost more often, simply because a person will
most definitely notice the loss of a gold coin, but if a lower value coin like a *quadrans*
or ass is lost, it is not of great consequence. The answer to this ties in with inflation.
This is the ‘oversight’ that Crawford made.

As already mentioned, the *quadrans* and *semis* were eventually discontinued, which
made the ass the lowest denomination available. At a certain point, prices must have
risen to the extent that the ass, though still in existence, was simply not used very
often. A similar occurrence can be inferred from a ‘modern’ example of Austria before the Euro. Austria used to have the schilling, and the lowest denominations were the groschen coins. Right before the change to the euro, the vast majority of groschen coins were the 10 groschen coin pieces. The interesting aspect is that 1 and 2 groschen coin pieces were still in existence, and could be used, but were not required anymore. The vast majority of prices only required the 10 groschen piece, as most prices were in multiples of 10 groschen pieces: for example, one would commonly encounter 9.90 schilling (ATS) prices, but not any 9.99 prices\textsuperscript{125}. In essence, even the cheapest objects could be purchased without ever needing to resort to the 1 or 2 groschen pieces. These groschen pieces were simply a remnant from earlier times, before inflation (among other things). The overall end result was that very few people or stores still possessed the 1 & 2 groschen pieces, even though it was still a legal denomination. Something similar could have happened in the Roman Empire. The fact that denominations lower than the ass were discontinued already shows the effects of inflation, as there was no need for them anymore (it could not have been attributed to problems with metal, since copper was readily available), and most probably the same would have happened with the ass at some point. This makes it clear why Crawford wasn’t able to find any lower denominations than the ass, and why even the ass (depending on the time period) would not have been very common.

**Errors in Monetization Calculations**

Crawford’s explanations of the hoards he examined which attempt to prove that poor monetization existed in various parts of the Empire, should by now have been shown as inconclusive because his attempts are too superficial. For example, even some of the data sets he used were very ‘poor’, which Howgego noticed and commented on: “Crawford has argued that ‘the use of coined money as means of exchange was largely limited to the cities of the Empire’. He cited as evidence the fact that of the thirty coins found at a villa near Capua all but one were already old during the period of occupation, and also notes another villa which produced only one coin. This slender base of fact will clearly not support the conclusion drawn…Advances in archaeology and a significant amount of documentary evidence dictate a substantial revision of this position.”\textsuperscript{126} 30 coins can hardly be seen as a significant number to judge from. For example, in contrast to Crawford, Howgego bases some of his findings in part through 30,000 coins excavated only at the village of Karanis in the
area of the Egyptian Fayum. 127 30,000 coins would certainly provide a more accurate appraisal than would 30 coins, though naturally neither author based all of their theories purely on these findings. As such, with reference to Crawford’s theory, where he writes “The evidence of coin-finds provides striking evidence for rural conditions. It seems fairly clear that high value coins travelled fast…But I do not believe that even in Italy small change normally travelled fast to country areas or was present there in particular large quantities” 128, cannot be valid. Crawford attempts to prove this by pointing out that bronze coins are not so often found in rural areas, or if they found, they are sometimes coins that are older than the particular time period in question. 129 As described in the previous paragraph, his evidence from coin-finds is not sufficient to prove poor monetization, however, the question of whether rural areas were sufficiently monetized is an avenue which should be explored. Before this is attempted, one last examination of Crawford should be made which relates to the facts that he presents which go beyond coin-finds: this is especially pertinent considering how controversial they are.

Crawford mentions that it “can of course be argued that a countryman would go into town to purchase his wants and that he could partake of a market economy as much as a town dweller. But the emphasis of Cato’s de agri cultura is on producing what was needed and buying only what was absolutely necessary…Small, recurrent purchases do not form part of the picture. If this was true of a farm run for profit it was probably even more true of peasant farms. Cicero’s claims that ordinary farmers had no spare cash undoubtedly rang true.” 130 At first Crawford certainly seems to make a strong claim by citing two Roman authors, but there are two main problems with this.

The first problem is that Cicero lived from 106-43 B.C. and Cato wrote his book around 160 B.C. 131 which would place both squarely in the time of the Republic, easily some 100-250 years before the time in question. Citing Cato to prove poor monetization or a ‘desire’ for self-sufficiency and applying it to the Principate, would be almost like quoting Adam Smith, to prove that mercantilism is a massive problem nowadays. Nobody today would claim that we are living through a period of mercantilism; in relation to this, Cato’s belief in a self-sufficient estate also cannot be transposed 250 years later to the Principate. Agriculture will be examined in a later section, and it will be clear that later Roman authors, like Varro and especially
Columella (who wrote during the Principate), did not believe in a self-sufficient estate, rather an estate with full usage and access to a market. Interestingly enough, there are various authors who make the same mistake as Crawford, and it is not clear why they use sources that are so obviously outdated in comparison to the time in question. It would be more appropriate to get a general overview of various pieces of relevant literature like Howgego does, where he discovers that “the most revealing evidence concerning the use of money is that in literature the absence of coinage is seen either as an attribute of the ideal primitive community or as a noteworthy feature of remote and backward areas…the educated classes, at least, regarded exchange by coin as normal in, and perhaps even characteristic of, the Roman world.”

The second problem lies in Cicero’s comment about ordinary farmers having no spare cash, since it actually proves that rural areas were monetized, and not the opposite. If the comment he made stated that ordinary farmers had ‘no’ cash, then there would be proof; however, the comment states that they had no ‘spare’ cash, which signifies that they had enough cash to conduct their usual business (paying taxes, purchasing whatever they need from the market, etc.). This means that these people might have made just enough money to live and that they did not have anything to put aside, nonetheless they still had money. If starting from as early as the Republic, the ordinary farmer had cash on hand to conduct business with, why should this suddenly not apply to the Principate, where even the majority of the primitivists will agree that the economy had become stronger? Just because rural areas do not attest to similarly high levels of monetization does not mean there was no usage of money for exchange. De Cecco explains it best, and writes “At the same time, there are regions of less intense monetization even today [1985] in developed countries. This does not mean that the whole economy is only imperfectly monetized, or that money does not function as a means of exchange. As long as some of the instruments forming the monetary subset are used, a monetary system can be said to exist, and the economy can be called a monetary economy, even if some of the monetary instruments are used for some functions and some for other functions. That things are so is the idea of a system. What Crawford would have to show to prove his point is that, if a Roman tried to finance a purchase by any of the instruments that were part of the Roman monetary system his payment would be refused.”
To discover the truth about rural areas, it is more useful to go beyond Crawford and look at Howgego’s discoveries where he writes that “the increasing number of careful excavations of more truly rural sites show that coins are to be found scattered in the countryside in quantity, and not just in ‘developed’ areas such as Italy, but also in ‘more backward’ provinces like Britain. In addition it is almost certainly the case (although no thorough treatment of the topic exists) that the majority of Roman coin hoards found in modern times come from rural rather than urban sites. It is true of hoards from Roman Britain…This does not mean that there was originally more hoarding in the country than in towns, as hoards concealed in towns are more likely to have been recovered in antiquity. It does, however, emphasize the quantity of coins in rural areas. It is implausible to explain away all these hoards as buried in the countryside by city-dwellers.”\textsuperscript{134} As a side-note, it is interesting to note that in one of Reece’s quotations mentioned earlier, whose findings generally disagree with Crawford, he mentions how the ‘central’ areas were more monetized, and in Britain, for example, he mentions how coin-finds “are very rare indeed.”\textsuperscript{135} Howgego’s findings, however, clearly show that Britain was not as ‘backward’ as had initially been believed.\textsuperscript{136} This is not to say that Britain was as monetized and as rich as Italy, but that it was far more monetized than had originally been accepted. To recapitulate, it is becoming clearer that not only were the central areas fairly monetized (as all three authors agree – at least to one extent or the other), but even the most far-flung western provinces as well. If Britain was monetized, not only in cities but in rural settings as well, then why would this not apply to provinces much closer to the monetized ‘core’ of the Empire? Even though no clear evidence exists, it cannot be too far fetched to assume that France and Spain were well monetized, judging that few authors attempt to disprove the monetization of these provinces. Concerning the West, this leaves only the provinces of Germania and Rhaetia, and little has been found to disprove monetization in Rhaetia.\textsuperscript{137} Even though Crawford attempted to show that Germania was very poorly monetized, Howgego, for example, disagrees, and writes “It may be that in the northern provinces of the early Principate purchases tended to be in larger quantities and at less frequent intervals or, for all we know, that debts were settled periodically, but such a picture is far removed from Crawford’s hypothesis of a world in which coin was little used as means of exchange.”\textsuperscript{138} It should then be clear that
Germania, as well, was sufficiently monetized for its purposes. An additional fact, which should make it clear that Germania would have had no difficulties acquiring coinage, is the existence of various fortifications along the Rhine stretching towards the Danube called the limes. Often enough wherever the Romans erected a fort, eventually a town would form and possibly one day a city would develop. This phenomenon is clear because often forts, by their mere existence, create an area of demand for a variety of goods where there was none before. While initially the supplies might be brought from far away, eventually enterprising individuals begin the production of goods that can be produced in surrounding areas, and thus supply the army. One thing leads to another, and eventually a town comes into existence. The effect was that annexation “by Rome brought the formation of towns where they did not already exist. This process was in part deliberate Roman policy and in part economic. Frontier provinces are unlikely to have paid for themselves, at least initially, and the injections of money from other provinces through the pockets of soldiers and veterans will have been responsible for the further development of towns and villages. In addition to the impetus given to monetization by increasing urbanization, the extensive use of coin by the soldiers themselves will have had a galvanizing effect. [For example,] Vast quantities of coin have been recovered from military sites on the northern frontier, and the tablets from Vindolanda [in England] bear witness to the routine use of coin in a military context.”¹³⁹ The existence of various fortifications in Germania would have definitely aided in monetization as the soldiers were paid in cash, and the most obvious place to spend the money was in the area where the fort was situated. As such, the conclusion can only be that the western half was, though not equally, at least sufficiently monetized both in its urban and rural areas. The same would apply to the northern regions where the army was stationed.
Roman Labour

Introduction

There seems to be a widely perceived notion that the Roman Empire had a predominantly slave mode of production: in essence, that slaves constituted the majority of the labour force, and furthermore, that due to the existence of slavery, the Roman Empire cannot be considered a capitalistic market economy. Both of these assessments are not entirely correct, and Temin says it best when he writes: “The conditions for the existence of a labor market typical of a market-based agricultural economy were satisfied in the early Roman Empire, although with less mobility and less correspondence between wages and labor productivity than one finds in Europe today. In other words, there was a market economy, but it did not operate with the efficiency of a modern market economy. The labor market in the early Roman Empire was comparable to the labor markets of early modern Europe—more efficient in some ways and less efficient in other ways.”

That labour was equivalent in many ways to early modern Europe, can also be inferred from Ludwig von Mises who claims: “it is certainly true that in the second century A.D., the Roman Empire nurtured a very flourishing civilization, that in those parts of Europe, Asia, and Africa in which the Roman Empire rules, there was a very high civilization. There was also a very high economic civilization, based on a certain degree of division of labor. Although it appears quite primitive when compared with our conditions today, it certainly was remarkable. It reached the highest degree of the division of labor ever attained before modern capitalism.” These two examples should make it clear just how ‘sophisticated’ Roman labour was, especially considering that “historically the growth of a more and more complex division of labour is closely associated with the growth of trade, the rise of capitalism, and of the complexity of industrialisation processes.”

Therefore, it is the purpose of this section to explore Roman labour in order to firstly show that slavery was not the predominant type of labour, and even though it was significant, that it cannot be compared to slavery as ‘we know it today’, but that it was economically far more similar to free labour; and secondly, to show how free labour
functioned and why the system can be considered to be a market economy in connection with the high levels of division of labour.

**Roman Slavery**

**Slavery & Capitalism**

To commence the discussion about slavery, it has to be made clear that the economy of the Roman Empire was not ‘based’ on slavery, and that the majority of the labour was not carried out by slaves, irrespective of what multiple authors and scores of books claim. This does not mean that the Roman Empire was not a slaveholding society - it most certainly was - but for the economy to be ‘based’ on slaves, the slaves would then have to have constituted more than 50% of the workforce, and this is most definitely not the case. An example of this erroneous belief, for example, is clarified by Scheidel who writes that the “widespread notion that slaves accounted approximately one-third of the population of classical Athens and Roman Italy is devoid of any evidentiary foundation and owes much to the corresponding share of slaves in the population of the Old South in the 1860 census.”

Beyond the fact that one-third is too high (as Scheidel claims, and as better figures will show below), but if for the sake of argument this number is used, it is still not enough to make the claim that the economy is ‘based’ on slavery. To that effect, Temin writes that these “estimates imply that one quarter or less of the Italian slaves lived in Rome, while the rest lived in smaller cities and the countryside—where they were less than one-third of the rural labor force. If these estimates are even approximately correct, slaves were not the dominant labor force either in the city or the countryside of the early Roman Empire.”

Secondly, and more importantly, this value corresponds only to Italy, and to claim that the entire Roman economy was based on slavery, similar (and actually even higher) percentages of slaves have to be attested for the other provinces in order for the average for the entire Roman Empire to reach 50%. However, this is not the case at all, as the opposite can be said of the provinces: in truth, they had far lower numbers and lower percentage of slaves and this can (unlike estimates for Italy) be proven, for example, by census returns from Roman Egypt which show that slaves “in Egypt appear…to have composed about ten percent of the population”. Furthermore, there is no evidence to claim that even the strongest ‘slave-based’ believers would believe that the provinces had a higher percentage of slaves than
Italy. The only feasible conclusion therefore, is that even if the one-third slave percentage assumption is accepted, the Roman Empire as a whole would ‘still’ not have been based on slavery.

A much better and more accurate estimate of slavery in the Roman Empire is “that only 10 to 15 percent of the population were unfree while another substantial proportion were freedmen.” In particular, it “has been estimated that slaves…composed (at the height of the Empire’s affluence) about a quarter of Italy’s population and about one tenth of that in the provinces.” A whole variety of other percentages could be brought forth, but most move similarly, and ultimately, irrespective of what the exact percentage of each individual province was, for reasons of simplicity, the value of one-eighth (12.5%) will be attributed as the overall percentage of slaves within the Roman Empire. Ironically, if one accepts the theory of the Roman Empire being based on slave labour, and that absolutely all 12.5% of slaves were in the workforce (which is a very erroneous statement, as some slaves would have been far too young, etc.) it would mean that at most 12.5% of the free population would be working (in order for slave work to constitute at least 50%), which would mean that at best 25% of the overall population would work, while 75% live from that work. Considering the fact that the same individuals who claim the Romans had a slave based economy are also often the same who claim that it was a subsistence economy, one can evidently see that something is absolutely wrong with this assessment. The economy cannot be a subsistence economy if only at most 25% of the workforce is able to work for the remaining 75%, and still be able to bring forth such wealth as evidenced by a multitude of archaeological excavations and literary works.

The answer to this conundrum is simply that it was not slavery, but free labour, which was the predominant form of labour. This should make it clear that the economy of the Roman Empire was based on free labour and that the system could therefore have been a capitalistic system. The fact that any form of slavery and capitalism can actually co-exist, is proven by the example of the U.S. in the 19th century. In the 1860 census, the ratio of slavery was nearly one-third for the slave states, but if the entire U.S. were to be included, then the ratio would have been one-eighth (12.5%), which is equivalent to that of the Roman Empire. Irrespective of whether the ratio
was expanded to include the entire U.S. or not, Finley best explains how capitalism and slavery are still able to co-exist by claiming:

“The second difficulty with the concept ‘slave mode of production’ is that chattel slavery has in the past been integrated into other modes of production, most obviously capitalism. Marx himself put the matter simply: ‘The fact that we now not only call the plantation owners in America capitalists, but that they are capitalists, is based on their existence as anomalies within a world market based on free labour.’ That kind of anomaly is a major reason for the introduction into contemporary Marxism of the concept of ‘social formation’…in which one mode of production is said to co-exist with others over which it is dominant. The problem then is that the secondary markets—slavery in the case of American capitalism—are not merely ‘dominated’ by the main mode but are incorporated into it, so that ‘mode of production’ loses any meaning other than as a synonym for a particular category of labour. When that labour is employed, as were American slaves, to produce for a capitalist world-market, it is meaningless and indeed misleading to speak of a slave mode of production in that context.”

This quote clearly exemplifies why and how capitalism can co-exist with slavery. If the slave-holding states of the U.S., where the ratio was found to be one-third, were still considered as capitalistic states, then a one-eighth ratio for the Roman Empire is certainly sufficient for it to be deemed a capitalist nation. This does not mean that the Roman Empire is by default also capitalist; however, it simply suggests that slavery is not a true hindrance for capitalism to exist (as long as slavery is not the predominant form of labour). As a side note it is perhaps interesting to note that even Finley, who generally did not seem to believe that the Roman economy was a capitalist system (among other things), very correctly makes the distinction that slavery is not point of contention for the existence of capitalism. To that extent, if even one of the arguably most quoted primitivists claims that slavery can co-exist with capitalism, there is seemingly little reason to explore this particular issue further. Nonetheless, Roman slavery has be explained in detail to show its economic importance and to demonstrate why it was not only different to U.S slavery, but extremely similar to free labour.
Importance of Roman Slavery

Unlike the modern concept of slavery, Roman slavery was very different. This can easily be inferred from an analysis of various slave-holding nations conducted by Scheidel, ranging from Ancient Greece to 19th century Brazil/U.S., who proves that Roman slavery was by far the most open kind of slavery. This means that in Roman society not only were (a) slaves manumitted more often, but slaves were also generally treated better and (b) slaves were employed not only in effort-intensive work (like plantations), but also in care-intensive work. In essence, this means that Roman slavery was significantly different from ‘modern’ slavery, and it was in fact very similar to free labour in a variety of aspects, all of which shall be explored.

In reference to (a), Temin writes: “Open slavery is a system in which slaves can be freed and accepted fully into general society; closed slavery is a system in which slaves are a separate group so that they are not accepted into general society even if occasionally freed. Roman slavery conformed to the open model…The open system of Roman slavery made slaves full participants in the labor market of the early Roman Empire.” Manumission was a positive incentive which occurred often, and this can be inferred from the fact that there “were no male slaves in Egyptian census over 32; since the census counted household slaves only, this age truncation suggests widespread manumission rather than exceptionally high slave mortality.” Another example comes from De Martino, who examines slavery in more general terms and mentions that the number of slaves above the age of 30 was very low in the early Principate, but that in the 3rd century the age of the slaves increases. This makes sense, as the economy ran into serious trouble in the 3rd century and individuals would have wanted to keep their slaves (their investments) around for much longer. It also proves that the age of manumission had nothing to do with the life expectancy of a slave, since life expectancy in the 3rd century would hardly have been any better than in the 1st or 2nd century, and most probably due to the worsening political, social and economic conditions, it would have been even worse: this leaves the only possibility that manumission was quicker and easier to achieve in the 1st and 2nd centuries. In connection with rates of manumission, Temin, writes that Scheidel “assumed that 10 percent of slaves in the early Roman Empire were freed every 5 years starting at age 25 in a demographic exercise.” For reference purposes, the
rate of manumission in the U.S. in 1850 was 0.2 percent in a five-year period, and mainly focused on children under 10 and presumably their mothers\textsuperscript{160}, while Roman manumission was generally more all-encompassing, although it was skewed towards urban slaves. Various sources seem to suggest that Roman urban slaves were more readily and commonly manumitted than were rural slaves\textsuperscript{161}; however, even if there was a bias towards urban slaves, Temin, for example, writes; “The promise of manumission of course was most apparent for urban, skilled, literate slaves, but it pervaded Roman society”\textsuperscript{162} which clearly shows that manumission was an attainable goal for any slave. A further reason as to why Roman manumission was special - beyond its regularity - was because “slaves were not only freed but were also given Roman citizenship and thus assimilated into Roman society.”\textsuperscript{163} This meant that “they were accepted into Roman society far more completely than the freedmen in other closed systems of slavery.”\textsuperscript{164} This is exemplified by a multitude of references of former slaves who not only achieved freedom, but also great wealth, and in some cases they became richer and more powerful than their former masters: “From the first century, the theme of the wealthy and insolent slave paralleled that of the freedman who surpassed the aristocrat in his life-style and his power.”\textsuperscript{165} It is highly debatable if this would have been possible - especially to such a degree - in the American South.

As a general conclusion to the aspect of manumission, the following quotes from Temin corroborate the view that it played a key role: “Manumission into Roman citizenship played an important part in urban Roman slaves’ incentives and perhaps also in some rural slaves’ incentives”\textsuperscript{166} and this “possible manumission made Roman slaves into members of a unified labor force in the early Roman Empire.”\textsuperscript{167} The last aspect of a unified labour force is yet be examined in more detail later in connection with (b), but as a side note it is perhaps of use to mention, that in reference to the urban/rural slave ratio, even though De Martino claims that the number of slaves in rural areas was much higher than in urban areas\textsuperscript{168}, Temin, by contrast, with reference to urban slaves, writes that it “was a substantial fraction, even possibly reaching half at some times.”\textsuperscript{169} The answer to this question seems to be closer to Temin’s view, especially considering that even though Italy might have had a more predominant rural slavery, other regions of the empire, like Egypt, seem to have had more urban slavery\textsuperscript{170}. Yet even for Italy, if a hypothetical calculation between rural and urban
slavery is conducted, it seems as if already 25% of slaves lived only in the city Rome,\textsuperscript{171} which would leave some 75% of slaves to be divided up among other Italian cities and the countryside. If the assumption is made that as with the case in Rome, around 25% of these were also in urban areas, there would be in total some 44\%\textsuperscript{172} of slaves situated in urban areas. Although this signifies that in Italy, rural slaves were more predominant, De Martino’s claim of the number of rural slaves being ‘much higher’ cannot be valid. Ultimately, it is clear that even though urban slaves had an easier time achieving manumission, it still corresponded to almost roughly half of the slaves, which is a significant amount indeed.

In further reference to (a), beyond the incentive and ‘common’ aspect of manumission, another aspect of the open nature of Roman slavery is the treatment of slaves: “Ancient Roman slavery was not like modern slavery, and it did not depend primarily on the threat of punishment to motivate slaves.”\textsuperscript{173} In essence, the life of a slave took on a number of forms: some were forced to work in chains and were treated poorly, while others were free to walk around and do their work as they thought best.\textsuperscript{174} The treatment of the slave depended on a variety of factors, though as a general circumstance, the sources seem to attest that the slaves who worked in mines\textsuperscript{175} and to some extent in the fields\textsuperscript{176}, endured the worst conditions, while slaves that worked as craftsmen, in the household, as managers\textsuperscript{177}, etc. worked under much better conditions (this aspect makes sense from the fact that creative or intellectual work does usually not improve through severe beating, as it depends on other factors,\textsuperscript{178} irrespective of the moral implications). This is not to imply that absolutely all slaves that worked in mines and in the fields worked under horrible conditions, as it also depended on the position, the master, and the slave in question; however, working in mines for example, was considered to be the hardest and most dangerous work, irrespective if one was a slave or if one was free. Another example taken from rural areas, were the slave herdsmen who were often left to their own devices. They could spend most of their time travelling with the herd wherever they desired with no supervision from their masters - in essence making them no different from free herdsmen\textsuperscript{179}. As such, a slightly modified quote from Temin could be used as a general condition of slave treatment in the Roman Empire, where he writes: “Rural, illiterate, unskilled [, and untrustworthy] slaves in the early Roman Empire may have experienced something like American slavery. Educated, urban [and skilled
[180] slaves experienced something close to the working conditions of free men.”

Exactly how many slaves were mistreated in relation to the number of slaves that were treated like free citizens (or even better) is not clear, and it can probably never truly be calculated as there are too many variables. However, one thing which is clear is that the life of at least a significant amount of slaves must have been better than the quality of life for the free poor. Temin writes for “some poor people, the life of a slave appeared better than that of a free man. Ambitious poor people sold themselves into slavery in a concrete realization of Hicks’ long-term employment contract that promised, however uncertainly, more advancement than the life of the free poor. This action, however rare in the early Roman Empire, would have been inconceivable in a closed system of slavery built on negative incentives.”

Even though it is clear that the true treatment of slaves cannot be measured properly, it is still possible to get an idea from looking at Roman law on slavery to see how ‘open’ the system was. Throughout the Principate a series of laws regarding slavery were enacted which gradually improved the life of slaves. Some examples of these laws were:

- Various measures to protect the slave from violence by the owner; for example, limiting torture, prohibiting the death of slaves incapable of working (enacted under Claudius), then generally prohibiting the death of slaves (Hadrian). Outlawing Ergastula (private prisons where unruly, or similarly, slaves were kept as punishment). Forbidding the sale of a slave to a pimp or gladiator trainer without showing ‘good cause’ (Hadrian), etc.

- Various measures granting the slave certain legal rights; for example, the right of asylum (Tiberius) in temples or even in front of images of the emperor. The right to appeal to magistrates or governors (Augustus), and/or have a third person act on the slaves’ behalf (appeals could be of varied nature, but for example, if slaves were suffering from starvation, etc.) The right of freedom in case of juridical controversy regarding manumission. The right of a master disinheriting an heir in favour of a slave (who would thereby be freed), etc. Furthermore, there “was no prohibition against educating slaves as there was in modern slavery. Modern slave owners relied on negative incentives and were afraid of slave revolts led by educated slaves. Ancient slave owners used
positive incentives and allowed and even encouraged slaves to be educated and perform responsible economic roles\(^{183}\), especially since “Education increased the value of slave labor to the owner.”\(^{184}\)

Even though the list of various laws which aided the slaves could be expanded, it should be sufficient to show that slaves not only had a certain amount of protection, but that they were also granted certain rights, and that through the decades of the Principate, there were evermore decrees which aided slaves. Together with the earlier assessments, this heavily suggests that the life of slaves, in general, improved throughout the Principate - at least until the various events in the 3\(^{rd}\) century.

The last aspect of slave treatment also combines with (b), in that slaves were granted certain legal rights to conduct a variety of businesses. In essence a “slave could also act on behalf of a master in his business dealings, e.g. loans, sales, issuance of receipts etc....In terms of litigation the slave was also considered as more than an object...For example, in matters of personal injury or damage of property the slave could litigate (i.e. sue) and act on his own behalf or represent another.”\(^{185}\) It was this aspect of being able to conduct the business dealings of the master, which ultimately gave the slaves a lot of freedom and ‘power’. As the quote shows, not only could a slave work for a master, but he/she could essentially work ‘instead’ of the master, and was even able to go to court if needed be. To that extent “both slaves and free men are found in every kind of civilian employment”.\(^{186}\) There was almost no job or position in which a slave could not be found, with the main exception being high political offices and the army (though there is some evidence of slaves being conscripted, but these seem to come from the time of the Republic\(^{187}\)). In fact, since slaves could be found in the lower echelons of the imperial civil service\(^{188}\) they could practically even have had more ‘power’ than, for example, a random equestrian, simply due to their position in the imperial bureaucracy. Essentially, however, there was “no sector of the elite economy in which slaves were not commonly employed.”\(^{189}\) It is perhaps important to note that not only could “slaves and free-men...be found working side by side”\(^{190}\) but the slaves who acted on behalf of their masters could be the ‘bosses’ or superiors of free labourers. The slaves in these positions could do anything the master could have done, including hiring/firing workers, purchasing equipment, etc.: in effect, there was no difference from what a master would be capable of doing. Essentially, the slave worked as a representative or agent of their owner, and to that extent they had
full powers to do as they wished with the business in question, without needing to contact or confer with their master for daily decisions. The exact nature and the importance of Roman agency, both slave and free, will be explored in a subsequent section, but for now it should be clear that slaves could be the proprietors of an enterprise, as *institores* (agent of ‘regular’ business), shipowners, *exercitores* (agent of maritime business), ship captains, *magistri naves*, etc. The Roman legal sources show a multitude of contractual regulations which involve slaves, as juristically, they were not persons. The jurists, as such, had to create a system of legal remedies in order to protect the rights of the owners and third parties that entered into contractual obligations with slaves; however, as already mentioned, this will explained later.

Naturally, those slaves that were agents, were treated in practically the same manner as any free individual in their position. The same applies to their economic function, because their job, consumption patterns, etc., would not be very different from those of any free person in their position. It would be very hard to believe that, for example, a slave in charge of a large ‘banking’ enterprise would be walking around in chains, wearing rags, and eating a loaf of bread a day while meeting with partners and clients. As such, the multiple sources all attest that slaves in these positions led ‘good’ lives, just as any free person would have, especially from an economic perspective. Naturally, the slave could not entirely ‘quit’ his work like a free person could, but beyond that, the freedom of slaves in these positions was substantial.

Yet another dimension to the number of possibilities for a slave, and which ties into (b), is that slaves were capable of owning a *peculium*. Finley explains the *peculium* best when he writes:

“What the Romans called *peculium* was property (in whatever form) assigned for use, management, and, within limits, disposal to someone who in law lacked the right of property, either a slave or someone in *patria potestas* [(a minor for example)]. In strict law, a *peculium* was a purely voluntary grant by the master or *pater*, which involved him in legal responsibility to third parties up to the amount of the *peculium*, and which he was free to withdraw at any time. In practice, however, the possessor normally had a free hand in the management, and, if a slave, he could expect to buy his freedom with the profits, to continue the business as a freedman thereafter if he wished, and to transmit it to his heirs. In practice, furthermore, a substantial part of
the urban commercial, financial and industrial activity in Rome, in Italy, and wherever else in the empire Romans were active, was being carried on in this way by slaves and freedmen from the third century B.C. on. Unlike slave bailiffs and managers, those who had a peculium were working independently, not only for their owners but also for themselves. And if the business were on any scale above the minimal, their peculium was likely to include other slaves along with cash, shops, equipment and stock-in-trade.\textsuperscript{193}

In practice, therefore, slaves with a peculium had their ‘own’ private wealth and property with which they could do as they pleased: this could even include ownership of other slaves, and as such, a “handful were richer and more powerful than most free men.”\textsuperscript{194} The richest and most powerful slaves of all, and thereby also eventually the richest and most powerful freedmen, were in fact former slaves of emperors. They gained so much wealth during their time as slaves that upon being granted freedom they were considered among the wealthiest individuals in all the Roman Empire. This is not to claim that all slaves reached such tremendous levels of wealth, but it is important to remember that it was possible, and that even slaves could be very wealthy individuals. In general, De Martino claims that slaves with a peculium were better off financially than daily wage-workers.\textsuperscript{195} As a general conclusion, one can take Finley’s remark, where he writes: “the slaves with a peculium are discussed in the first instance as slaves, when, economically and in terms of the structure and functioning of society, they were mostly self-employed craftsmen, pawnbrokers, moneylenders and shopkeepers. They did the same kind of civilian work as their free counterparts, and in the same ways and under the same conditions, despite the formal difference in legal status.”\textsuperscript{196} To that extent, the only question which has to be answered is how many slaves actually had a peculium. The main problem is that no sources seem to be able to make educated estimates, and as such one can only speculate that it must have pertained to only a minority of slaves, but nonetheless a significant minority, as multiple mentions of successful freedmen are made in a variety of sources, and slaves with a peculium had by far the greatest chances of buying or attaining their freedom. An example of this can be inferred from Temin, who cites Saller: “The disproportionately high representation of freedmen among the funerary inscriptions from Italian cities reflects the fact that ex-slaves were better placed to make a success of themselves in the urban economy than the freeborn poor:
upon manumission many of the ex-slaves started with skills and a business.” That all freedmen, while still slaves, actually owned a peculium, or needed one to become free, was not necessarily the case; however, a large number of freedmen most probably used to have a peculium while they were still slaves. Furthermore, as mentioned earlier in connection with some individuals becoming slaves in order to lead ‘better’ lives and eventually achieve freedom, Temin’s quote shows that:

“Freedmen became ubiquitous in Roman administration, public and private. They ran large enterprises, and they were active in the administration of the empire… the most active, ambitious, educated, and able slaves were more likely to gain their freedom as a reward for good behaviour or by purchase [(using their peculium for example)]. Of course, the system did not work perfectly, and many slaves were freed for eleemosynary motives or at their owner’s death. These random elements do not eliminate the signal that a freedmen in general was someone who had accomplished a great deal already. It was good policy to deal with and hire freedmen. This statement refers to a free labor market and makes sense only if there was a functioning labor market.”

At this point it should be sufficiently clear that Roman slavery was very unlike modern slavery and that essentially, it did not hinder the emergence or existence of capitalism, a market economy, or even a free labour market. To reiterate the current section:

- The slave population constituted around 12.5% of the entire population of the Empire, which is significantly less than the 33% of the American South (that was still considered a capitalistic society).
- The slaves had far more legal rights and powers than modern slaves, and they had a very high probability of being manumitted, so that few slaves above the age of 30 existed. At the point of manumission, slaves became full members of society, i.e. members of the free labour force.
- Slaves could work in practically any job or position, be it as an employee, agent, or manager. In many cases they were treated similarly to free labourers, and from an economic perspective there was also little difference. Furthermore, they were capable of receiving education, meaning that by the time of manumission many slaves were already experienced, educated, and
they most probably already had a job. Essentially, the vast majority of slaves at manumission did not become ‘unemployed’.

- Slaves were capable of owning their own property, be it money, other slaves, shops, ships, etc., and with which they could do as they pleased. This *peculium* was completely their own to manage, and they kept this gained wealth after the time of manumission (possibly minus the cost of manumission).

It is evident that even though Roman society was a slaveholding society, slaves were in many ways, at least from an economic perspective (production, consumption, etc.), “able to participate in the labor market of the early Roman Empire in almost the same way as free laborers, although their starting point often was considerably less favourable [(for example; the time required to manumission)].”199 It is perhaps of use to mention that when discussing free labour, conditions in pre-industrial Europe should be kept in mind, since free labour in modern times is subject to slightly different conditions. The Roman Empire and its free labour force are not being compared to modern Europe, rather to pre-modern Europe, and to that extent, the conditions were extremely similar. This is exemplified best by two quotes, the first from Finley and the second from Temin:

“At one pole is the slave as property and nothing else; at the other pole, the perfectly free man, all of whose acts are freely and voluntarily performed. Neither has ever existed. There have been individual slaves who had the bad luck to be treated by their owners as nothing but a possession, but I know of no society in which the slave population as a whole were looked upon in that simple way. At the other end, every man except Robinson Crusoe has his freedom limited in one way or another in consequence of living in society. Absolute freedom is an idle dream…Between these two hypothetical extremes there is a whole range of spectrum of positions…often co-existing within the same society. A person possesses or lacks rights, privileges, claims, duties in many respects: he may be free to retain the surplus of his labour after payment of dues, rents and taxes, but not free to choose the nature and place of his work or his domicile.”200

“The mobility of labor in pre-industrial Europe was quite free, but limited by the remnants of feudal societies. Class differences, educational differences rooted in class
distinctions, and laws restricting job changes prevented full occupational mobility. These restrictions made labor markets in early modern Europe less efficient than that of the early Roman Empire; improved transportation and communication made labor markets in England and Holland, at least, more efficient.”

Even though the entire labour market is yet to be explored, it should be clear that as much as slavery might have limited a part of the Roman labour force, the remnants of feudal societies in early modern Europe would have limited their labour force, which once more demonstrates why these different models of labour forces can be compared and contrasted. “Roman slavery was so different from modern slavery that it did not indicate the presence of non-market, traditional actions. Instead, ancient Roman slavery was an integral part of a labor force sharing many characteristics with the labor force of other advanced agricultural societies.”

**Roman Labour and Shares of Workforce**

**Introduction**

Free Roman labour was not only the predominant form of labour in the Roman Empire, but it was also never completely pushed out of any area of the economy by slavery, as some authors seem to suggest. If there was indeed any area where slaves were predominant it was not because slaves ‘pushed’ out the free labour force, but because there was either an insufficient availability of labour, because free labour was less inclined to conduct certain types of dangerous work, because certain laws made slaves more ideal for the job in question, or because a particular type of work was not actually in existence until a specific moment in time and that it was also staffed from the onset by slaves (such as the lower imperial bureaucracy). As such, slavery never truly ‘pushed’ out free labour: it was more the case that slaves took over jobs which free labour either could not, or would not, conduct (for whatever reasons). Irrespective of this fact, both slaves and free labourers, as explained earlier, constituted practically the same labour force. This meant that slaves and free labourers worked side-by-side, often under the same conditions, and to that extent both segments show high levels of division of labour not achieved until modern capitalism. This division is a clear sign of not only the sophistication of the workforce, but also of the strength of the economy. It is the aim of this section,
therefore, to reveal the sophistication of the workforce and the conditions it worked under not only in order to prove the conditions of a market economy and of capitalism, but also to show how advanced, and similar (to some extent), the aspects of the labour force were to early modern Europe. To that extent, Temin writes: “In summary, there was a market for the services of people in the early Roman Empire, just as there was a market for goods.”

The complexity, entirety, and depth of Roman labour and how it functioned within the Roman world, is an aspect which, unlike the previous parts of this paper, will not be explored with the same amount of detail and intensity. It simply falls outside the scope of this paper to thoroughly explain and explore the multitude of possibilities for all aspects of labour, and to thus portray various scholars’ perceptions in order to draw a conclusion. This is not to say that no effort has been expended on this issue in that regard; however, approaching the subject with as much rigour and pedantry as some previous sections have received would easily double the length of this paper, and furthermore, the exact intricacies and the interconnectedness of Roman labour, fall slightly outside the main purpose of this paper. As such, the main aspects will be highlighted and many explanations and descriptions will be omitted; however, this does not mean that insufficient evidence exists or that this section has been superficially examined. Instead, a ‘skeleton’ version of the true nature of Roman labour will be presented. For example, a large part of the definition and explanation of Roman labour will be based almost completely on the works of Temin, Erdkamp and Brunt.

**Three Sector Hypothesis**

The first and overriding question in this section will be to figure out how much of the workforce was employed in agriculture, manufacture, and service. Even though this is a difficult question to answer, especially since no relevant records remain (and were probably not even calculated by the Romans), an attempt must be made all the same, as it shows how economically advanced the Roman Empire was. This ‘three sector hypothesis’ originated, according to Aiginger, in the 1950s, or according to Schetkatt and Yocarini even as early as the late 30s, early 40s; and although it was later expanded to four sectors in the 70s, only the ‘original’ three will be used, as all Roman scholars who referred to the sector hypothesis only discussed the original
three. In truth, interestingly enough, the vast majority of scholars actually only focused on agriculture and industry (manufacture), often completely neglecting service - though why they did this is not clear (at least those scholars writing before the 50s have an excuse). Essentially, the three sector hypothesis “reads that the share of the primary sector decreases with rising income, that the secondary sector…first wins, but then in later stages of development loses shares in total production and demand, and that the service sector continuously grows and finally takes the lion’s share of production.”

An example of this can be inferred from the following table (Table 3) showing the structure of employment in the Netherlands, the United Kingdom and the United States, 1700-1998, as a percentage of total employment:

<table>
<thead>
<tr>
<th>Year</th>
<th>Netherlands</th>
<th>United Kingdom</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700</td>
<td>Agriculture</td>
<td>40</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Industry</td>
<td>33</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Services</td>
<td>27</td>
<td>22</td>
</tr>
<tr>
<td>1820</td>
<td>Agriculture</td>
<td>43</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Industry</td>
<td>26</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Services</td>
<td>31</td>
<td>30</td>
</tr>
<tr>
<td>1890</td>
<td>Agriculture</td>
<td>36</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Industry</td>
<td>32</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Services</td>
<td>32</td>
<td>41</td>
</tr>
<tr>
<td>1998</td>
<td>Agriculture</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Industry</td>
<td>22</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Services</td>
<td>75</td>
<td>72</td>
</tr>
</tbody>
</table>

The table clearly shows the following: as the nations became richer and more advanced the share of workforce in agriculture steadily declined, at first towards the benefit of manufacture and service, and then eventually almost completely towards service. It is perhaps of use to mention that it would be more appropriate to call each of the three sectors as primary, secondary, and tertiary, because agriculture, manufacture and service are somewhat misleading; however, as the majority of authors use the latter, it will remain as such. The latter terms are misleading because some of the categorisations that have been allocated to each sector do not, at first, appear to belong.

As such, for the terms used in this paper, the agricultural sector includes forestry and fishing, and although according to Browning-Singelmann (cited by Schettkat and
Yocarini), mining also falls under the agricultural sector\textsuperscript{211}, it will be placed under industry which is where Maddison (whose table is shown) has placed it\textsuperscript{212}. Furthermore, Roman scholars, such as Goldsmith,\textsuperscript{213} do not define which categories fall under what sector, however, they mention the exact same ratios for the U.K., U.S., and Netherlands which, strongly suggests that they also allocated mining to industry. As such, industry includes mining, manufacture, construction and utilities, while services then includes all other remaining sectors, for example: trade, finance, transportation, government, military, etc.\textsuperscript{214}

Now that the division of sectors is clear, a further aspect has to be explained in order to hinder any later confusion. More specifically, many sectors are in truth related to each other and are sometimes even hidden. For example, a peasant who grows grain in order to make some bread is actually conducting partially agricultural and partially industrial work. The agricultural work is the amount of time spent on growing and harvesting the grain, while the industrial work is the amount of time spent making bread from the harvested grain. It is evident that this ‘multiple’ categorisation takes place, because Browning-Singelmann for example, place ‘food’ under industry.\textsuperscript{215} This does not imply that all food falls under industry, only food that was transformed through a ‘manufacturing’ process. If a peasant picks some grapes and eats these grapes then this can clearly be deemed to be agricultural activity; however, if a peasant picks grapes and then makes wine out of them, the wine-making process falls under the industry sector, while the grape growing process falls under that of agriculture. This distinction has to be clear, for otherwise too much confusion arises.

**Urbanization & Agricultural Sector Share**

Although at first glance, urbanization alone reveals little about the conditions of labour, it does show approximately how many people would have been employed in agriculture and how many others in urban industries - even though some industries were located in rural areas. Furthermore, Morris, Saller, and Scheidel write that a “broad index of economic development is the level of urbanization in a society, because it is a measure of the proportion of the population producing non-agricultural goods. The most basic division of labor, though not sharp and clear-cut, was between urban and rural. Urbanization is commonly thought to be positively correlated with economic development”.\textsuperscript{216} If urbanization can be used as an indicator of economic
development, then the Roman Empire was indeed developed, for regional “levels of urbanization appear to have been unusually high by pre-modern standards, for instance in Roman Italy and Egypt...[Furthermore,] The great capital of Rome was the voracious consuming center of the empire. How this megalopolis, the largest city in Europe until 1800 CE, affected production, distribution and consumption throughout the empire...[is] a major question.”

However, it is difficult to question the extent to which the Roman Empire was urbanized and how much of the labour force was in agriculture, because many authors claim differing ratios, although most are similar. For example, Hopkins and Erdkamp independently claim that 80 to 90% of the labour force was employed in the agricultural sector. However, Erdkamp expands upon this percentage, and mentions that not all were constantly working ‘in the fields’, because many peasants were actually employed seasonally in other areas and performed more than just pure agricultural work. To that effect, Goldsmith and Temin (also independently) seem to have come to similar conclusions, and Goldsmith claims that 75-80% of the labour force was employed directly in agriculture, while Temin claims it was 75%. As a general conclusion therefore, the ratio of 75-80% of labour in agriculture could theoretically be accepted as applying to the Roman Empire, although it is actually possible that the ratio was even lower.

The agricultural ratio could be even lower due to the fact that urbanization ratios might have been underestimated. For example, in terms of urbanization, Goldsmith assumed “between nine and 13 percent of total population, nearer the lower boundary at the beginning of the principate and nearer the upper boundary two centuries later”, in order to be able to calculate his agricultural ratio. He came to these urbanisation ratios by concluding that the four largest metropolises of the Roman world: Rome, Alexandria, Antioch, and Carthage, together, accounted for some 2-2.5 million inhabitants, with an additional 1-2 million from the few cities containing more than 100,000 inhabitants. Furthermore, the approximate population of 3,000 smaller cities had to be included, which entailed an additional 2-3 million. This brought an urban population total of between 5 to 7 million, in a total population of 55 million. The main problem with these estimates is not so much the size of the largest cities (at least population numbers for the largest cities seem to be agreed upon by most authors), it is the figures for smaller cities which raise many questions. Goldsmith
assumed 666 to 1,000 inhabitants, on average, for each of the 3000 ‘smaller cities’ (in order to get 2-3 million), which he seemingly based primarily on the average population of late medieval German cities. The fact that this could easily be an erroneous way of estimating the size of smaller cities is clear - as this paper has shown numerous times – by demonstrating that the Roman Empire is more comparable to 18th and 19th century European and developed nations, than to the late medieval period. For example, in order to calculate urbanization ratios, the U.S. census only counted the number of towns and cities figuring above 2,500 inhabitants as urban, and according to that, in reference to Goldsmith’s initial urban ratios, the U.S. only reached Roman levels around 1840 with 10.8%. However, using U.S. census terms and applying them to the Roman Empire, would signify that 3,000 cities would have had at least 2,500 inhabitants: this would mean that a minimum total population of 7.5 million applied only to the smaller cities. This would imply, at minimum, an approximate 14% urban ratio. Erroneous as it may seem, it is necessary to take U.S. census limits and apply them to the Roman Empire in order to have some sort of a standard: Goldsmith, for example, does not actually mention what size of cities he considers ‘urban’. For this reason, the task at hand is to attempt to calculate Roman urban figures by referencing U.S. census limits.

A possible way of doing this is by examining the work of Duncan-Jones, and his exploration of the average city size for the western half of the Empire. For example, in reference to places in the northwest of the Spanish peninsula, he mentions that “Pliny’s three sets of figures for parts of Spain each give an average taxable free population of about 11,000 per community”, and that this applied to 61 Spanish communities. Even though Duncan-Jones’s actual calculations referred to Africa, and he only used Pliny and Spain as a reference, he discovered that for Africa, the “present calculation thus strongly suggests that the upward limit of population reached at towns of the second rank in Africa was a good deal higher than the figure of 10,000 recently proposed as the general maximum.” To that effect, his overall conclusion was that “the total of roughly 14,000…may be representative of the normal average size of town population in the west.” As the West was perceived to generally be less populous and less urbanised, than the East, this would signify that the average for the entire Roman Empire could even be higher. Furthermore, Duncan-Jones mentions that 14,000 was the average size for a ‘town’ and not for a ‘city’, which
actually suggests that the average ‘cities’ had a larger population, and according to Goldsmith there were 3,000 “smaller cities”\textsuperscript{231}, although Goldsmith’s cities are most probably the same as Duncan-Jones’s towns. Even so, the urban population suddenly becomes massive - in the range of 42 million\textsuperscript{232} - which signifies an urban ratio of 76%. This is very hard to accept, as such ratios have only been achieved in the most recent past: for example, the U.S. had a 75% in 1990.\textsuperscript{233} The answer to this conundrum is not easy to deduce. To some extent, the 14,000 could have included rural populations, as the Roman concept of ‘town’ or ‘city’ is slightly different to that of modern concepts\textsuperscript{234}, and partially because if the assumption of some 14,000 inhabitants per city is made, then there most probably were not 3,000 cities of such magnitude. This is corroborated by evidence that the number of 3,000 seems to have included minor fortresses and villages.\textsuperscript{235} Another possibility is that the population was larger than 55 million, which was most probably the case, as it is very hard to believe that the population would be 55 million over a time-span of nearly 200 years. Zelener writes: “Potentially, a population of approximately 60 million at the time of Augustus could have doubled in size over the next two centuries, and still be confined to the appropriate estimate of carrying capacity”.\textsuperscript{236} However, irrespective of the true population size, exactly how many Roman cities existed within the 14,000 range is currently unknown; nonetheless, for reference purposes, erroneous as the exercise might be, the U.S. census figures can be examined to discover at what point the number of U.S. cities above 2,500, divided by the population living in them, equalled 14,000 per city.

Interestingly enough, the year 1840 surfaces again, where on average, 14,084 inhabitants lived in 131 cities above 2,500.\textsuperscript{237} Furthermore, it would perhaps be better to compare the U.S. when its total population was more similar to that of the Roman Empire, in order to make a better judgement.\textsuperscript{238} Following this rationale, it was 1880 by the time the total population reached roughly 50 million, and the average for 940 cities was 15,000.\textsuperscript{239} Even though 1890 could also theoretically be examined (because the population had reached 62 million) the U.S. would not only have been even more advanced than the Roman Empire at this point, but the U.S. average had jumped to roughly 16,300, and then continued to increase significantly over the years, which makes comparisons of this kind become even less meaningful. It is worthy of note to mention that 1880 is still a feasible comparison, because if the Roman Empire
attested a 14,000 average only for the West (at some point at the turn of the first century), then together with the more urban East, and progressive urbanisation (at least until Hadrian/Antoninus Pius), the number might have risen to 15,000. As such, in reference to urbanisation, the ratio for the U.S from 1840 to 1880 increased from 10.8% to 28.2%, and although such comparisons are naturally not very scientific, it might not be too farfetched to assume an urbanisation ratio of 15-20% for the Roman Empire at its ‘urban peak’ in terms of U.S. census urban ratio definitions.

If the 15-20% urbanisation ratio is accepted, it would signify a lower agricultural ratio than initially accepted by Goldsmith and the others. If with a 9-13% urban ratio Goldsmith assumed 75-80% of the labour force was working in agriculture, it would mean that with a 15-20% urban ratio, there could have been some 70-75% working in agriculture. That this could have been possible is corroborated by Zelener, who in reference to a possible increasing productivity in the agricultural sector, due to ‘new technologies’ (which shall be covered in a later section), writes: “From the perspective of the agricultural labor force, which accounted for 80% of the total population, approximately 16% would have been freed for other occupations under the assumption of a perfectly efficient labor market.”

This means that at the technological and economic ‘peak’ of the Roman Empire, at best 64% of the labour force would have been working in agriculture. However, even though the Roman labour market will be shown to be fairly ‘advanced’ (at least by 18th-19th standards), it can still not be deemed as perfect, and as such a value of 70% would be more applicable. This is not to imply that conditions throughout the entire empire were equal, that the urban and agriculture ratio were the same everywhere, but even Goldsmith for example, implies that the urban ratio for Italy was probably somewhere in the range of 20-25% (although why he then considers it possible that the remainder of the empire can lower the ratio to 9%, is not clear). In essence, if Italy had such a high urban ratio, a similar comparison can probably be made with the more sophisticated regions of the Empire, like Egypt for example. As a test, if the urban population of Egypt and Italy (20-25%) are taken, and the assumption is made that for the remainder of the entire empire there was only a 10% urban ratio (which is probably too low), the value of 13% computes for the entire Empire. As a general conclusion, it should then be clear that neither the 15-20% urban ratio, nor the 70-
75% working in agriculture, is implausible. In fact, this is more than probable, especially when comparing the numbers to other nations.

In reference to the share of labour in agriculture, Goldsmith writes that in “the United States the share is given as fully 70 percent as late as 1820 at a time when the ratio had declined in Great Britain to one-third. In a less developed European country like Italy the ratio was still as high as 60 percent in 1871 which was probably not much below what it had been during the early Roman Empire.”\(^{244}\) For even less developed countries he writes that these “figures compare with averages of 77 percent of labor force…for all less developed countries in 1960.”\(^{245}\) Beyond the astounding fact that it was as late as 1960 by the time less developed countries reached Roman levels, it is interesting to note that in 1820, the U.S. had 70%\(^{246}\) of the labour force working in agriculture, even though its urban ratio was only at 7.2%\(^{247}\). This fact raises a lot of questions, as it is not clear how it is possible that with a 7.2% urban ratio, the U.S. ‘only’ employed 70% of the labour force in agriculture, while the Roman Empire, even with Goldsmith’s ‘low’ ratios of 9-13%, supposedly employed a higher ratio of 75-80%. Even though technology will be covered in a later section, it will be clear that the answer does not seem to lie in technology being a differentiating factor. First of all, the agricultural technology was not much more advanced in the early 19\(^{th}\) century than during Roman times, and secondly, it seems that technology has little to do with the difference between urban ratios and agricultural labour force ratios. As a test, the agricultural and rural ratios for the U.S. were compared for the years 1820, 1890, and 1990-1990, and the difference between the two was calculated (Table 4):\(^{248}\)

Table 4:

<table>
<thead>
<tr>
<th>Year</th>
<th>Agricultural Ratio</th>
<th>Rural Ratio</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>70</td>
<td>92.8</td>
<td>22.8</td>
</tr>
<tr>
<td>1890</td>
<td>38</td>
<td>64.9</td>
<td>26.9</td>
</tr>
<tr>
<td>1900</td>
<td>37</td>
<td>60.4</td>
<td>23.4</td>
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<tr>
<td>1910</td>
<td>30</td>
<td>54.4</td>
<td>24.4</td>
</tr>
<tr>
<td>1920</td>
<td>25</td>
<td>48.8</td>
<td>23.8</td>
</tr>
<tr>
<td>1930</td>
<td>19</td>
<td>43.9</td>
<td>24.9</td>
</tr>
<tr>
<td>1940</td>
<td>18</td>
<td>43.5</td>
<td>25.5</td>
</tr>
<tr>
<td>1950</td>
<td>12</td>
<td>36.0</td>
<td>24.0</td>
</tr>
<tr>
<td>1960</td>
<td>7</td>
<td>30.1</td>
<td>23.1</td>
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<tr>
<td>1970</td>
<td>4</td>
<td>26.3</td>
<td>22.3</td>
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<tr>
<td>1980</td>
<td>3</td>
<td>26.3</td>
<td>23.3</td>
</tr>
<tr>
<td>1990</td>
<td>3</td>
<td>24.8</td>
<td>21.8</td>
</tr>
</tbody>
</table>
Even though the data set is not very large, it clearly shows that there seems to be, on average, a difference of 23.9, which means that once the rural ratio is calculated, roughly 23.9 should be subtracted from it to discover the amount of labour force in agriculture. That technology has nothing to do with this number, is evident from the fact that firstly, the difference does not show too large of an oscillation over the years, and secondly, after 170 years, the difference from 1820 is very similar to 1990, even though the agricultural technology of 1990 is definitely better than that from 1820. Furthermore, the same calculations were conducted for the Netherlands and the U.K. for the years 1700, 1820, and 1890, and even though direct comparisons to the U.S figures are not possible for a whole slew of reasons (for example: only cities above 10,000 were used in calculating urban ratios, and for both nations, irrespective of their existence as empires, only the European parts were calculated, etc.), the average difference for the U.K. and Netherlands was calculated to be 31.8 and 28.4 respectively. Beyond the fact that these differences would actually be lower if cities above 2,500 and not only from 10,000 were considered urban - thereby probably bringing the figure more in line with the U.S. figure - technology was again proven not to be of any consequence as no clear pattern emerged displaying such a possibility.

To that extent, Goldsmith’s (among others’) discrepancy with regard to the Roman Empire, is very confusing. How can the U.S. attest for such a continuous difference between agricultural and rural ratios of at least 20 (which is corroborated, to some extent, by evidence for U.K. and Netherlands as early as 1700), and the Roman Empire be placed with a difference of 11-12? In essence, Goldsmith’s original 9-13% urban ratio should therefore not correspond to 75-80%, but rather to 67-71%, and especially in light of the possibility that the true urban ratio was more in the 15-20% range, it would be more likely to correspond to an agricultural labour ratio of 60-65%.

The invariable conclusion which ensues out of these calculations is that it is more than probable that 60-65% of the labour force was working in agriculture for the Roman Empire, and it could have possibly been even be lower. However, in order to make any further educated guesses about the exact percentage and the ensuing percentages of industry and service, a detailed examination of the workforce needs to be
conducted, and once this is completed, a further attempt at a percentage can be attempted.

**Roman Labour Market**

The first aspect which has to be explored before any further discussions about the share of the labour force is conducted, is the question of not only the existence of a labour market, but also, just how efficient it was. The purpose here will be to show that the Roman labour market most certainly existed and functioned similarly to 18th-19th century Europe, thereby exemplifying a capitalistic market economy. Furthermore, it is perhaps of use to remember, as already alluded to in the beginning of ‘Roman Labour and Shares of Workforce’, that this particular section will predominantly use the work of Peter Temin, in particular his article on “The Labor Supply of the Early Roman Empire”, in order to demonstrate the nature of Roman Labour.

**Definitions**

At the onset a variety of definitions and explanations have to be conducted, commencing with the term ‘labour market’, which for purposes of this paper, will be explained as the following:

“To have a labor market, two conditions must be filled, at least partially. Workers must be free to change their economic activity and/or their location, and they must be paid something like their labor productivity to indicate to them which kind of work to choose. How closely do these conditions need to be filled to speak of a unified labor market? The answer for contemporary studies is that labor needs to be mobile enough to bring wages for work of equal skill near equality. That does not mean that everyone changes jobs with great frequency; it does mean that enough people are able and willing to do so to eliminate conditions where payments to labor are either excessively higher or lower than the wages of comparable work in other locations or activities. Even in the United States today, which contains the most flexible labor market in history, wages for comparable jobs are not completely equalized across the country.”

This means that the two overriding questions which need to be posed in order to better ascertain the existence of a functioning labour market in the Roman Empire, are: if
workers were capable of changing their work when required (or wanted), and if they were paid for their work. A secondary aspect would be to determine whether there was a sufficiently unified labour market in the entire Roman Empire to bring wages of equally skilled work to near equality. For this secondary aspect it is important to remember that wages would never be truly equal for the same type of work as this would always depend on the surrounding conditions; for example, the rural wages and urban wages for a comparable job would not be the same due to higher urban living costs. However, this does not necessarily mitigate the existence of a Roman labour market: it actually proves the existence of market forces. In fact, if all wages for comparable work were exactly equal throughout the entire Empire (or any other nation), non-market conditions would be implicated as influencing factors, since the underlying conditions would be different. Another, but more extreme example of this concept, would be to consider two butlers in two different households. Both butlers A and B work in the same size of household, they have exactly the same responsibilities, work equally hard, work exactly 10 hours every day, etc., and thereby ‘naturally’ get paid the same wage. However, there is one difference between households A and B: household owner A is a kind, open-minded, and friendly individual, while owner B is a vicious, mean-spirited, and critical individual. Even though both owners pay the same wages, and the work is exactly the same, the non-quantifiable ‘conditions’ surrounding work B are much harsher, making workers less inclined to accept work B under the same wage conditions as work A; however, this has nothing directly to do with the actual ‘work’. As the example shows, it is very hard to compare ‘comparable work’, as the underlying conditions will always vary. Ultimately, if there is a slight difference in the wages of ‘comparable’ work a market economy is not necessarily disproved, rather, it is proven. For example, if all craftsmen were to be paid exactly equal wages throughout an entire nation, non-market forces would be implicated (as in state-run planned economies). It is ultimately important to remember that in a market economy the wages for comparable work in a unified labour market would only have the underpinnings of a tendency to equalize, but they would never truly be equal due to a difference in both quantifiable and non-quantifiable underlying conditions.

A final aspect, before finally examining Roman conditions, is that the “abstract conditions that define a labor market typically are related to labor markets in
industrial economies; they need modification to apply to labor markets in agricultural economies. Most workers in such an economy are rural, working either in agriculture or in associated crafts and services. Most of them will not change their occupation or their residence without strong pressure of some sort. A rural labor market exists when enough of them are free to move in response to economic stimuli to keep rural wages at a moderately uniform level…this still allows for substantial geographic variation in both level and the rate of change of rural wages. For example, migration and wages interacted in early-modern Britain to keep wages similar, but by no means equal.”

In essence what this means is that since “the great mass of workers in the early Roman Empire were illiterate and unskilled” - at least in comparison to modernity - the ability of certain workers to find better paying jobs beyond their customary environment, would have been difficult. For example, someone very skilled in growing grain would probably not be able to find employment for that particular skill in an urban setting, and might be economically better off remaining in an agricultural setting - naturally, as long as work was available. Furthermore, even the ability of an urban worker, without any education or significant skills, to move to better conditions would also be restricted. These aspects are, however, logical, and do not need to be explained further, as long as it is understood that hindrances to complete labour mobility will always exist: for example, even in modernity, if only 10 surgeons exist but 100 are needed, it would be absurd to take random individuals and have them conduct surgeries if they have never studied medicine.

Now that the definitions have been established, the ensuing sections can focus solely on conditions in the Roman Empire in relation to wage labour and worker mobility.

**Wage Work**

As a general condition of wages in Roman labour, the following quote by Temin can be referred to, where he writes:

“Workers in large organizations like mines and galley ships, were paid wages, as in more modern markets. People engaged in more skilled and complex tasks were paid in more complex ways, most probably for longer units of time than wage labor, again as in more modern labor markets, even though explicit long-term contracts for labor were not made. It is reasonable that the force of competition under those circumstances brought wages and labor productivity into the same ballpark. Skilled
workers…were paid more than those engaged in unskilled tasks. Educated workers received higher wages than uneducated. Administrators of large organizations earned more than individual workers.”

Even though the quote is very abstract, and one aspect is seemingly not entirely correct (the non-existence of long-term contracts for labour which shall be explained later), the quote still exemplifies that first of all, wages were paid (and as was previously shown, generally, in monetary terms), and secondly, that they corresponded to the complexity, education and skill required for the work: this clearly displays market factors at work. Therefore, in reference to free labour, Temin writes, “the evidence on wage dispersion in the early Roman Empire is indistinguishable from that in pre-industrial Europe, although our knowledge of ancient wages is sparse.”

Even though the quotes can be taken as a general condition, there are, however, two aspects of confusion in Temin’s work: the question of wages in contrast to slavery, and the existence of long-term contracts for labour. This is exemplified in the following quote from Temin: “Some work in the early Roman Empire was done for wages and some by slaves. There were even salaried long-term free workers in Egypt under the early Roman Empire…Craftsmen sold their wares in cities and also supplied them to rural and urban patrons in return for long-term economic and social support. People who worked for or supplied senators and equestrians similarly often worked for long-term rewards and advancement.”

The question of wages and slaves will be explored later, but it is evident that a discrepancy exists between the two quotes because in his earlier quote Temin writes that ‘explicit long-term contracts for labor were not made’ and in the later quote he mentions the various forms of long-term contracts and commitments which did exist. As such, there seems to be some confusion, and to that extent there are also other authors who have mentioned that there were no long-term contracts for labour. It has to be clear, however, that concepts of short-term and long-term contracts are modern, and that they have to be expanded to correspond to Roman times. Even so, from a cursory glance, it seems that definitions for long-term labour contracts are not very specific, as they often omit the exact amount of time implicated, and as such, the definitions for short-term contracts need to be used; in most cases short-term contracts
can reach a maximum of 1 year. Theoretically, this means that contracts above 1 year are automatically long-term, and possibly even some contracts that are a little less than 1 year can also be deemed as long-term, especially since direct comparisons between modernity and Roman times should not be too rigid. To that effect the Romans definitely had long-term contracts, irrespective of what definitions are used; however, since precise definitions do not appear to exist, several possible examples of long-term contracts will be mentioned:

1. There is direct evidence among mine contracts in the province of Dacia where one miner was hired for 176 days and another was hired for a full year. Beyond receiving wages of 70 and 105 denarii respectively, paid in unknown intervals, each miner also additionally received cibaria, which was a basic maintenance (food/rations).

2. Even though the military can under circumstances be “distinguished from private activities” as Temin claims, it does not change the fact that during the Principate, the forces were primarily staffed by volunteers and that they signed on for 16-25 years (depending which part of the army). Furthermore, their wages were also paid in monetary terms (which shall be expanded upon in a later section).

3. For a variety of public and private construction projects which could take several years, large amounts of workers, craftsmen, architects, etc., were employed, and remunerated by monetary means. An example of this is the excavation of the Fucine Lake under Claudius, which took 11 years and continuously employed around 30,000 workers. While not all workers in such large ‘construction’ projects would have had a long-term contract, much like the mining example, some workers might have easily had long-term contracts for the full 11 years (especially the more important, skilled and educated ones).

4. There is direct evidence that the senatorial curators who were responsible for the maintenance of the aqueducts in Rome, beyond employing only slaves who conducted the hands-on work, also employed a salaried staff which included architects who were free labourers. While long-term contracts are not specifically mentioned here, it is most certainly implied as it is highly doubtful that the curators would have been hiring staff and architects daily, or even
yearly, for such an ongoing and complicated task (because this would have required significant knowledge of the lay-out and condition of the aqueducts).

5. From a remnant of a contract from an Egyptian town, there is evidence of two brick-makers who had been hired for 1 year in order to make 65,000 bricks. They were remunerated by monetary means fully in advance, and even though this may make it appear as though they had been paid for their product and not directly for their labour, the contract actually seems to hint towards a labour contract. This is evident from the fact, that among other aspects, the contract explicitly mentions they have to work in the ‘brick-factory’ of the owner, and furthermore, that for every day they do not appear for work (for whatever reasons), they have to pay 2 drachmas to the owner. As such, the contract is obviously a labour contract, as a contract to purchase a product would not entail the various conditions of work because a person purchasing a product would not care if it took the producer 100 hours or only 10 hours to produce, as long as the agreed product is delivered on time.

6. Further evidence comes from a contract between a slave-owner and a weaver in Egypt, where the weaver agrees to accept a female slave from the slave-owner as an ‘apprentice’. Even though part of the contract entailed the education of the girl as a weaver, the remainder is actually a labour contract. The slave girl was hired to work for the weaver from sunup to sundown for 4 years, with 18 days of ‘vacation’ per year. As salary, she was to receive 8 drachmas per month in the first year, 12 drachmas per month in the second year, 16 drachmas/month in the third, and 20 drachmas/month in the fourth year. Furthermore, she was to receive food and clothing from her owner while the weaver was obliged to pay all taxes and dues accruing from the education of the girl.

7. More evidence arises from contracts and conditions of labour regarding managers and agents (instiores, exercitores, procurators, etc.) where it is often implied that they had long-term contracts. It would make no sense to send a manager or agent to another province to set up a particular business, with the knowledge that some types of businesses take a long time to plan, set-up, and become profitable (easily well beyond one year). In that regard, Aubert writes that “people employed not only their dependents, but also free mandataries and hired employees, to perform business transactions on an occasional or
The emphasis is naturally on the ‘permanent basis’ which strongly suggests long-term.

From the 7 examples mentioned, it should be clear that various forms of long-term labour contracts existed, and that the workers were paid via monetary means. Furthermore, no matter what kind of definition is used for long-term labour contracts, the examples cover all possibilities, ranging from and including 176 days, 1 year, 4 years, 11 years, 16 years, 25 years, and permanent contracts. Even though the examples given are few amongst many other possible ones, it is not clear why none of these would be considered to be long-term labour contracts, especially taking into account that direct comparisons with modernity should not be too rigid. As a result, the only conclusion that can be drawn is that the length of labour contracts simply corresponded to supply and demand conditions of the market and of the work in question, as some work would only require short-term day-labourers while other work would require more long-term employment. This is exemplified by a concluding quote from Brunt, describing the legal aspect of labour contracts, which were called *locatio conductio operarum*:

“In *locatio conductio operarum* the workman was the *locator*, and the *merces* was his wage for one or more *operae*, obviously of a specific kind, each *opera* being a full day’s service; 100 or 1,000 *operae* meant 100 or 1,000 workdays, and the *operarius* was essentially a day-labourer or ‘journeyman’, even though he might be engaged for a long period or even indefinitely. Even if he was engaged for more than a day at a time, the practice probably preferred by old Cato, his wage might still be fixed at a daily rate, though the Dacian documents…show that it could be fixed for a period.”

Furthermore, Aubert mentions, in combination with *locatio conductio*, that the *merces* was usually paid in money, clearly once more suggesting the existence of a market economy. Brunt’s quote on a *locatio conductio* contract should clearly lay any further questions about long-term contracts to rest, especially since the *operarius* (the worker) could be engaged ‘for a long period or even indefinitely’.

An additional side-aspect which may be of interest, is that this particular law on *locatio conductio operarum* can be considered to be very sophisticated; for example,
with respect to wage-labour Finely writes: “Historically speaking, the institution of wage-labour is a sophisticated latecomer. The very idea of wage-labour requires two difficult conceptual steps. First it requires the abstraction of a man’s labour from both his person and the product of his work…Second, the wage-labour system requires the establishment of a method of measuring the labour one has purchased, for purposes of payment, commonly by introduction of a second abstraction, namely, labour-time.”

That the Roman wage-labour system met both the first and second requirement is evident from the fact that *operae* was ‘service’ (or labour), which corresponds to the needed abstraction from both person and product, and furthermore, *operae* was measured in days, corresponding to the abstraction of labour-time. In Finley’s words this would signify sophistication, and as such it is unclear why Finley often denies any sophistication in the Roman system; additionally, it makes it clear that the Romans were more than aware of wage-labour and its many aspects.

The second point of contention in Temin’s work is his comment that ‘some work in the early Roman Empire was done for wages and some by slaves’ which heavily implies that slaves were not paid. As the slavery section in this paper has previously shown, Temin falls under the category of scholars who actually claim that Roman slavery made slaves full participants in the Roman labour market, and that the existence of a *peculium* allowed slaves to own their own ‘property’. To that extent, the question of wage-labour and slavery has to be clarified, and the answer to this issue is that slaves actually were, or should have been, paid for their work. By examining Example 6 in the aforementioned long-term labour contracts, the example of a slave girl who was hired for 4 years should shed some clarity on the issue, as the contract clearly stipulated that the slave girl, not the slave-owner, was to receive 8, 12, 16, and 20 drachmas per month per respective year. If slaves could not get wages, then why would the contract stipulate that the slave-girl is to be paid? Another example, mentioned by DeMartino, refers to the slave owners who found it profitable to ‘loan’ out their slaves to third parties. These slaveholders either carried this out as a regular business, or only occasionally, during those times when their own business did not require the additional work. However, irrespective of the reasons, this shows that slaves could work for third persons, and DeMartino clearly writes that the slaves were paid wages by the third person. To that extent, Drexhage, Konen, and Ruffing, also clearly mention that according to the Roman jurist Ulpian, slaves could
work for wages. As such, it is then evident that slaves were earning wages, and as a last concluding remark on this aspect, the remainder of Brunt’s quote on the *locatio conductio operarum* should clarify the issue:

“The *operarius* might be either a free man or a slave…No doubt it was normally the master who leased the services of a slave, but some texts (which I can see no reason to regard as post-classical) show that a slave could also hire himself out; he would be a slave working for his own account (a practice we know to have been common enough), paying his master (we must suppose) either a fixed sum or a proportion of his earnings.”

As the quote shows, the question does not revolve so much as to whether a slave could earn a wage, rather how much of the wage the slave could keep. To that extent, DeMartino also writes that slaves kept a part of the wages for themselves, from which was most probably deducted, at minimum, the cost of their maintenance (food, clothing, etc.) and additionally any further profit the owner wished to make. As Example 6 with the slave-girl shows, the owner was obligated to provide for the girl’s food and clothing, irrespective of the fact that the girl was working for the weaver; consequently, it is likely that at least the cost of this basic ‘maintenance’ was later deducted from the slave girls wage by the owner. It is interesting to note that in none of these cases the existence of a *peculium* is mentioned, and yet all of the slaves were earning wages. Furthermore, why is it that the slaves were paid in wages, and not the owner, with the equivalent amount, especially if the slaves had no *peculium*? The answer to this issue seems to imply that slaves who worked for third persons automatically (or very often) had the right of a *peculium*, for otherwise why was the slaveholder not paid directly? In essence, a slave without a *peculium* was an object with no rights of possessing anything else. Following this reasoning, how could a contract have been drafted which included an object being paid a wage? This makes it clear that any slave who worked for a third person and was being paid a wage must have had a *peculium*. The slaves with no *peculium* who worked for third parties most probably would not have been paid a wage, rather the third party would have directly paid the owner a ‘rental’ fee, most probably under *locatio conductio res* (this type of contract allows for the temporary use of some commodity or facility) and not *locatio conductio operaes*. Evidence, however, generally seems to imply that slaves
who worked for third parties were paid through wages, and not rental fees, which very strongly suggests that slaves who worked for third parties had the right of a *peculium*. While it is unknown how many slaves worked for third parties, it was most definitely a considerable sum, suggesting that a significant number of slaves had the right of *peculium*.

The overriding conclusion is that slaves with labour contracts were most definitely fully paid for their labour, and that they had a *peculium*. Furthermore, because the majority of scholars tend to mention labour contracts and never ‘rental’ contracts in this context, this strongly suggests that when slaves conducted work for third parties they must have had a *peculium*. The only open question therefore, is how much of their wages slaves were able to keep. Evidence in this regard tends to suggest that in the majority of cases they only kept a fraction of the wages allotted to them, but in light of the fact that their owners had to provide for their maintenance (food, clothing, shelter, etc.), it is clear why a fraction of their wages would have subsequently been taken by the owner. As such, it is impossible to make any generalisation as to how much money was taken from the slaves, as some owners might have only taken sufficient fractions to account for the expenditures, while others might have even wanted to make a profit. Furthermore, as scholars tend to often mention this ‘fraction-taking’ by the owners from the wages of their slaves, it suggests that while the slaves must have had a *peculium* they most probably did not have the right to administer it. In essence, being entrusted with a *peculium* (*concessio peculii*) did not automatically signify the right to administer it (*concessio liberae administrationis*).\(^{280}\)

However, irrespective of the slave’s right to administer his/her own *peculium*, what is clear is that slaves were paid, and that they were paid the same wages as free labourers for the same quantity and type of work, as no sources suggest the contrary. To that extent, the ability to work, earn a wage for this work, and to even keep this wage (or fractions of it) clearly shows why Roman slavery is nigh on impossible to differentiate from normal free labour. As such, Temin writes, if “there was a labor market in the early Roman Empire that functioned about as well as the labor market in pre-industrial Europe, then wages in the early Roman Empire would have been approximately equal. Wages for similar tasks might have varied by a factor of two or three, as wages did in eighteenth century Europe, but they were not different orders of
magnitude. This presumption is consistent with the very fragmentary evidence we have about wages in the Principate.”

Labour Mobility

Similarly to wage work, and as a general condition of labour mobility, Temin’s work can be referred to and commented on further, especially in reference to when he writes:

“There was a functioning labor market in the early Roman Empire where workers typically could change jobs in response to market-driven rewards. As in all agricultural economies, the labor market worked better in cities than in countryside. Slaves were part of this system with less ability to respond, but with every incentive to respond to the best of their ability. The restriction on labor mobility may not have been more severe than the restrictions on labor mobility in early modern Europe. Education was the key to good jobs and the good life in the early Roman Empire as it is today.”

In essence, the main restrictions to movement for Roman free labour were ‘natural restrictions’, meaning non-political or non-legal in nature. This means that the ‘only’ restrictions were those connected to education, communication (knowledge of conditions elsewhere), various costs of relocation, etc. In essence, these types of restrictions even exist in the most developed nations today. For example, a financial manager cannot become a brain surgeon overnight if he has never studied medicine. Even the physical relocation from one geographic area to another in the same type of work has certain restrictions. In the first instance the question arises of whether a worker is even aware that there is an opening for his work in another city/town/country, and in the second, there is the question that is related to the costs of relocation. Costs of relocation are not only the monetary costs of transport for the worker and the worker’s family and furniture to a new geographic location, but also the non-quantifiable ‘costs’, as for example, language barriers, familiar obligations at home, personal preferences, etc. There will always be some kind of barriers to movement, be they of a physical or a personal nature. To that extent, the only main differences between Roman times and modernity with regard to these particular considerations, are communication (as a result of improved technology) and probably lower costs of modern physical transport. However, the main comparisons are
generally between early modern developed nations and the Roman Empire, and as such, for example, Temin writes: “Free urban workers in the early Roman Empire were compensated for their work and were able to change their economic activities. There were no hereditary or guild barriers to overcome.” Naturally, depending on the exact date and on the country in question, many early modern developed European nations still had remnants in some form or other of barriers to labour mobility which remained from the days when guilds and hereditary work were the norm. Even though over time these barriers became weaker, the Roman Empire did not have such barriers, which signifies an easier labour mobility for Roman workers in comparison to early modern Europeans. On the other hand, perhaps physical relocation costs and communications were better for early modern European nations, although this would again depend on the exact date and country in question. As a general conclusion, however, it is clear that labour mobility conditions in the Roman Empire for free labourers were not too different from those in early modern Europe.

The only question remaining is once again the issue of Roman slaves and their mobility. In Temin’s general quote on labour mobility he writes that ‘slaves were part of this system with less ability to respond’ and this aspect, much like that of slaves in combination with wage work, has to be expanded upon further. In the first instance, as already mentioned in the slavery section, slaves could be found working in nearly every kind of work that free labour could also be found, which largely suggests that sufficient slave labour mobility was also more than possible. To that extent, Temin writes that implicit “in Columella’s advice is the ease with which slaves could change jobs. For example, when Horace was given an estate on which he employed five free tenants and nine household slaves, he employed a *vilicus* from an urban household with no apparent training in agriculture.” As such, it becomes clear that slaves could not only conduct various types of work within the slaveholder’s own business, but as the earlier section on slave wage work shows, slaves could work for third parties when these third parties were in need of extra labour, and in some cases (like that of the slave girl) slaves could even be employed when they were not actually educated for, or skilled to do, particular work. To that extent the mobility of slave labour would not seem to be too different from that of free labour, and yet Temin writes that the “mobility of labor must have been even more pronounced for free labor.” The simple answer to this issue is that on a ‘lower’ and ‘basic’ level it is
certainly true that free labour had more freedom of choice and movement than the average slave did - many slaves had to comply with what their owners demanded - and to that extent free labour certainly had more mobility. However, on a ‘higher’ level the slave might have had more mobility. The slave might have hypothetically had more mobility, at least from a superficial economic perspective, since some slaves could have had powerful and wealthy owners with wide-ranging connections, whose interests in employing their slaves would have aided slave mobility.

Taking a hypothetical example of 500 free labourers of low skill in comparison with 500 slaves of low skill owned by a rich senator, should clarify the issue. Both types live and work in the city of Alexandria, and both groups conduct the exact same type of work (of whatever kind). For some reason this particular type of work is suddenly no longer in demand, and no other similar work can be found - at least no work without a significant upgrade in skill or education for both types of workers. At this point the ability of a single free labourer to actually look for a job somewhere else would definitely depend on his available funds, as the free worker would either have to relocate to another city, or he would have to pay someone to educate him or teach him the skills which were in demand. To make matters simple, the exact same type of work is in high demand in the city of Rome, so theoretically the free labourers could go to Rome. However, there are two main barriers to this: firstly, the individual free labourers would have to be well informed about the opportunities available, and secondly, even if they hear about the possible opportunities in Rome, they would still have to pay the transport fee to get there. To that extent, it is questionable if all 500 free labourers would actually be capable of getting to Rome to appease the demand, especially if personal considerations are accounted for in the calculation as well. On the other hand, even though the 500 slaves have no ‘free will’, they would be much more mobile as the senator would hardly want to pay maintenance for 500 slaves who are doing nothing. Considering the senator’s wealth and connections, it would not be hard for him to be aware of conditions in Rome and pay the transport fee for all his 500 slaves. To that extent the slaves would be able to respond much more quickly and more thoroughly to the sudden oversupply in Alexandria and undersupply in Rome, thereby possibly solving the sudden ‘shock’ or disequilibrium much more effectively and efficiently. As such, on a ‘superficial’ economic level the slaves have a better mobility than the individual free labourers, and even though this example is
hypothetical, it should show once more that the Roman economic system should never be underestimated, as it allowed for various solutions and possibilities to be achieved for a range of scenarios. However, this is not to imply that slaves always had better mobility (this depended on a variety of factors) but it should be clear that when Temin writes that slaves had ‘less ability to respond’, this does not necessarily have to ring true - at least when examining the aspect from a ‘higher’ economic level.

**Further Info on Labour & Employment & Roman law**

It has to be clear that wage labour contracts were most definitely not the only type of ‘employment’ contracts possible, as the Roman legal system allowed for the existence of a variety of contracts with a multitude of possibilities. To fully depict and explain all that was possible under Roman law would easily require the volume of entire books to be written, and as such only a few examples will be mentioned to show just how ‘similar’ Roman law was not only to early modern European law, but also to modernity, especially in a ‘basic’ economic sense. Most obviously, it should not come as a surprise that Roman law shows many parallels to modernity, as even in modernity many nations base their legal systems on the Roman one. “Roman law in continental Europe was so comprehensive, successful, coherent…and abstract, as to offer judges useful guidelines for the regulation of economic activities with no serious conflicts with the needs of economic life, despite the age of the statutes.”

In the first instance it has to be clear that irrespective of the type of contract, the possibilities for litigation in the event that a contract was broken (of whatever kind) certainly existed. Unlike ‘popular’ depictions of Roman society in film and books (not so much scholarly works, especially legal ones) the upper class Romans (emperors included) could not disregard the law without impunity. In essence, even emperors would have been obligated by law to fulfil the terms of any contract they signed, even with a low-skilled daily labourer. Under Roman law, it did not matter what station one held in life, only that a contract was signed, and for this reason even contracts with slaves could be valid. To that extent, if there was a breach of contract, the party breaching the contract could be sued by the other party. Furthermore, the concept could even be taken to the next level, where in case of injury, the workers could sue either their employer or the person who had imparted this injury on them for
the loss of wage. Examples of such actions regarding daily wage workers are mentioned by Brunt, who writes:

“one case in which the *operarius* actually obtained the ear of an emperor (Severus), who laid down that the employer being deceased, the *operarius* was entitled to receive from his heir the entire annual wage due under the contract, provided that he had not found paid employment elsewhere in the interval; it is noteworthy that the man was an amanuensis (*exceptor*)...A man who had suffered injury (*pauperies*) by a domestic animal could obtain compensation from the owner for the costs of healing and for lost *operae*; likewise, if injured by *res deiectae vel effusae*, he could claim for the value of lost *operae*, past and future. The father of a shoemaker’s apprentice had a claim for loss of earnings from his son’s *operae*, if the shoemaker had hit him and put out his eye.”

The list of the variety of possible claims is endless, but the three examples clearly show that not only did the legal system have ‘protections’ against contract breaches, but it also ‘protected’ the individual workers who, due to injuries imparted upon them by third parties, were incapable of working. To that extent, Finley is not entirely correct when he writes: “What is totally absent is anything we can recognize as a labour programme, anything to do with wages, conditions of employment, the competition of slaves.”

To fully explore all aspects of a Roman ‘labour programme’ would once again go beyond the point of this thesis, but it still has to be clear that the Roman legal system certainly did, as demonstrated through the examples above and through the long-term contract examples mentioned earlier (i.e., the ‘apprentice’ slave girl who received ‘holidays’), at least to some extent ‘protect’ workers and thereby the conditions of employment. Furthermore, why Finley complains that the Roman Empire had no labour programmes, even though many developed countries did not have any either - at least until the 19-20th centuries - is not clear at all. In addition to this, when discussing modern labour law, Tavits writes: “The development of labour law remains in a large part in the period when industrial production was introduced. The formation and development of factory legislation is regarded as the seed of the creation of labour law. Several authors have though claimed that the legal regulation of labour relations does not originate solely from the development of factory legislation but the modern labour law has several connections with Roman private law.
and the modern employment contract has, in fact, evolved as a result of the classification of contracts found in Roman law.”290 To that extent, when examining Roman law pertaining to female and child labour, a significantly ‘modernistic’ viewpoint is brought forward.

Under Roman law and practice there seems to have been little distinction between females and males as labourers, managers or even owners (classical Roman law). In particular, the Roman jurist “Ulpianus explicitly says that business managers could be of either gender.”291 As for labourers, the laws on locatio conductio seem to mention no difference between males and females either,292 and furthermore, for example, women are definitely attested for having worked as weavers,293 potters,294 fishers,295 shoemakers,296 doctors,297 and glassblowers,298 and that generally, according to Drexhage, Konen, and Ruffing, women could be found in any type of work - and that, in large numbers.299 The only jobs which seem to have been impossible for women to conduct were those in the military and in politics, as women do not appear to have been attested for in either. However, all other types of work appear to have been open to women, irrespective of whether they worked for themselves or as labourers for third parties. For example, in a study of the ownership of clay beds or brickyards and the officinatores (workshop managers or entrepreneurs) of these, it was discovered that of 150 owners, 54 were senators, 7 were equestrians, one was an imperial slave, and 43 were women. Of the 355 officinatores, 20 were women.300 As a general overall condition of Roman female labour, Scheidel writes that it should be “clear that ancient women will not as a rule have been barred from agricultural labour. [Furthermore,] Any brief glance at the urban sector reveals the commitment of women to a broad range of economic activities.”301 While it is impossible to know exactly how many women were part of the Roman labour force, it is certain that it was a significant amount. As a point of reference, the U.S. Census of 1870 shows that women constituted roughly 15% of the labour force,302 and even though such statistics are missing for the Roman Empire, it can be inferred that the percentage was definitely at least 15%, though probably much higher, and more encompassing. However, irrespective of the exact number of female Roman labourers and the jobs that they conducted, it should be clear that conditions for female labour were not too different from those in the 19th century, and in fact, they were possibly better, as no sources seem to suggest that women were paid or treated any differently to men.
Neither the legal nor the literary sources used for this paper seem to mention at any point that Roman female labour was to be treated differently than male labour for the same job, and although this omission is no proof, at least it shows there was a possibility that female and male labour for the same type of job was paid more equally than it was in the 19th century. It has to be clear, however, that not all conditions were equal for Roman women as they were for men; for example, the power of a paterfamilias over his wife or even his son’s wife (if his son was still filiusfamilias) was strong. For example, according to early Roman law (not classical law) by “manus” the husband, or the husband’s father, had power of life and death over the wife...and all the property of the wife...vested in the husband or his paterfamilias.”

This condition however, improved over time, so much that by the time of classical law “the wife acquired more and more independence; manus was almost obsolete in the time of Gaius [160 A.D.]”. Even though a full examination of women’s rights throughout the Roman era would require extensive research, one aspect is certain: by the height of the empire, the rights of women were better then ever before, and even though modern western women have even more rights, the apt comparison for this paper is concerned with 18th-19th century women from an economic perspective. In that respect, for example, Roman women seem to be often found more frequently in positions of economic power (not so much political, at least not directly), be it as owners, or as managers, than women in the 18-19th centuries. However, even this aspect is debatable as too little information exists; nonetheless, Aubert’s book on “Business Managers in Ancient Rome” mentions women as agents and managers to a sufficient degree (as exemplified by the 20 women out of 355 officinatores), and it does portray that women were not only legally capable, but that they were actually managers for a variety of businesses in the Roman Empire. How much of this could also apply to the 18-19th centuries is highly debatable and would require significant research, but from a cursory glance it would seem that labour mobility and work option conditions for Roman women could have possibly been better than in the 18th-19th centuries.

The next question of child labour is also difficult to answer, as once again little information exists because no sources seem to mention Roman child labour laws per se. However, a brief analysis of Roman child laws shows that there were distinctions in age regarding the legal capacity of the child. Until the age of 7 a child was
considered an *infantes* and therefore it had no legal capacity, from the ages of 8 to 12 (or 14) a child was considered an *impuberes infantia maiores* with a very limited legal capacity, which did not include the ability to sign legal contracts (i.e. conduct business)\(^{305}\). It is only from the ages of 12 for females and 14 for males (or possibly earlier; upon being granted the *toga virilis*, but not earlier than 12) that a child achieved full legal capacity and was a *puberes*.\(^ {306}\) This fact has nothing directly to do with adulthood, as some type of legal protection (unconscionability) existed until the age of 25, and furthermore, depending on the age, the ‘child’ still needed to have either a tutor (until 12) or a curator (until 25), who took care of the child’s person and property (only the tutor took care of the child’s person) if no father existed.\(^ {307}\)

However, what is important to understand is that from the age of 12 ‘children’ were legally capable of conducting business.\(^ {308}\) What this signifies for the Roman Empire is that ‘children’ below the age of 12 most probably did not work, at least not for third parties, since they were incapable of signing legal contracts. Irrespective of whether a child (below 12) signed a contract, or the guardian of the child signed a contract, by law the child was not liable to fulfil the terms of the contract. To that extent, it makes it questionable if third parties would have hired children below the age of 12 due to the uncertainty, not to mention the illegality, of such an act. Additionally, anyone up to the age of 25 could use the law of unconscionability, which gives protection in case a contract was signed which was deemed ‘unfair’, and in accordance with that, anybody could lay claim to unconscionability against the party that was being ‘unfair’ to the person below the age of 25.\(^ {309}\) Unconscionability therefore, should have limited abuses, or very one-sided contracts, as the third party (the contracting party) would have been aware of the possibility of even strangers, for that matter, being capable of suing in case of ‘unfair’ or ‘abusive’ contracts. The only question that remains is how much the legal aspects were followed in reality, and though very little information appears to exist, the sources seem to be generally in accordance with the legal assessments. This is exemplified, for example, by 30 ‘apprenticeship’ contracts from 18 B.C. to the 3rd century A.D., where, it seems, the minimum age of the ‘children’ was 12-13 when they commenced their ‘apprenticeship’.\(^ {310}\) Furthermore, Aubert mentions a boy of 16\(^ {311}\) and two girls of 12\(^ {312}\) who worked as managers, and a quote by the jurist Gaius mentions boys and girls commonly working as managers; although no age is given by Gaius, the Latin terms for boy and girl suggest children above 12.\(^ {313}\) Even though this evidence is not very extensive, none of the sources
used ever seem to mention contracts being signed with children below the age of 12, which does suggest that the legal aspect definitely did also apply to practice. As a side note, interestingly enough even in modernity (2007), the legal minimum working age for children, depending on the country/state (all in the developed western world), is also in the 12-14 range, which seems to suggest that the Roman legal context was used in order to create modern child labour laws. It has to be clear, however, that Roman laws on children were not directly laws regarding work (like modern ones), since Roman laws do not actually hinder children from working before the age of 12, they just hinder children below 12 from legally signing contracts (i.e. being capable of conducting business transactions). This means that legally, Roman children could work; for example, for their parents in whatever business they were engaged in. This is evidenced through epitaphs, for example, a daughter who worked as a gold weaver and died at age 9. The distinction is that while there would be no legal problem with a child of whatever age working for its own parents, the child could not legally find employment with a third party. To that extent, even in the richest and most developed countries today (2007), irrespective of stringent child labour laws, it is not uncommon for children, especially for those growing up on farms, to ‘help’ their parents with work on the farm. This is exemplified, for example, by U.S. federal child labour laws which allow children of any age to work on a farm either owned or operated by their parents. However, the real comparison to be made is between Roman times and 18-19th century, and this is where it appears that the Romans were more ‘sophisticated’ when considering the issue of child labour. For example, in a sample regarding spinners in Manchester from 1832, the workers had begun working, on average, from the age of 9.8, and an age distribution of cotton workers in Manchester in 1818 shows children commencing work as early as from the age of 6. As for a mining example, up “to 1842 in Britain, children as young as four or five could legally work underground. After that year, the legal working age was set at ten, though many children younger then this were still put to work. In the USA in the early years of the 20th century, children as young as eight years old still worked in coal mines…It was not until the first Federal Child Labour Law was passed in 1916 that child mining in the USA was finally outlawed.” In contrast to this, according to DeMartino, miners in the Roman Empire were either slaves, criminals, or free men, but there is no mention of children. Even though omission of any mention of children is not direct proof, the additional facts that children before 12 could not sign
contracts to work in mines, or that children below 8 were legally not capable of being criminals would have significantly hindered child labour in mines. Even though theoretically, children below 12 could have been amongst the slaves, Edmondson writes that “it is often claimed that slaves formed a substantial part of the labour force…but their role can be, and perhaps has been, exaggerated”, signifying that the chance for children below 12 to have worked in mines is extremely low.

The overriding conclusion to the question of free labour conditions, rights, etc., is that the Roman Empire most probably was not much different from the 18\textsuperscript{th}-19\textsuperscript{th} century developed nations, with the great possibility that certain conditions were probably better, especially with respect to child labour and the possibilities for female occupations. This is not to say that conditions were ideal for all workers in the Roman world, as some workers undoubtedly lived and worked under horrible conditions: to that effect the 20-21\textsuperscript{st} centuries are much more sophisticated. However, the Roman world does portray a society which definitely had some form of a ‘labour programme’, which is contrary to Finley’s claim. Evidence shows that real ‘labour laws’ detailing conditions of work existed, as for example the \textit{lex metalli Vipascensis}, which proclaimed that miners were legally entitled to have access to sanitary buildings, like baths with warm water, and that teachers working in the area of the mine were exempt from taxes (in order to keep them in the area to further the education), etc.. Furthermore, as the previous example of the slave girl weaver apprentice shows, not only workers, but even slaves were entitled to ‘holidays’. All of this evidence should make it clear that even though it is extremely difficult to come to any specific conclusions, the conditions of labour in the Roman Empire were not worse than those during the 18-19\textsuperscript{th} centuries, which demonstrates once more the sophistication of the Roman economic system.

\textit{Managers & Agents}

It has already been touched upon in ‘Financial Aides and Agents’, that the role of managers and agents was extremely important in Roman society. Without managers and agents many wealthy individuals could have hardly amassed and kept the wealth that they did, especially since the properties of the wealthy were often large and located in various areas. An example of the inheritance of C. Caecilius Isidorus in 8 B.C. should clarify the issue, as his will made reference to 4,116 slaves, 3,600 pair of
oxen, a herd of 257,000 and 60,000,000 sestertii. Even though the exact size and type of property was not mentioned, according to P.A. Brunt’s calculations, the oxen and herds would have respectively required 360,000 iugera (approx. 90,840 hectares) of arable land and some 771,000 iugera of pasture land (approx. 194,550 hectares). The size of the land is important to know because Brunt mentions that the 4,116 slaves probably cultivated at most between 62-82,000 iugera - although probably even less, since some slaves would have been too young to work - and others would have been employed in non-agricultural areas. Irrespective of that fact, this means that even if all the 4,116 slaves worked in the fields, they were still not sufficient enough in numbers for the maintenance of Isidorus’s lands, and if the assumption is made that Isidorus only owned the arable land (the pasture land could have been public land) it would mean that approximately 278-298,000 iugera were worked by free labourers and/or tenant farmers. Furthermore, if the same ratio of slave to arable iugera is used (15 or 20), this would mean that there must have been some additional 13,900 to 19,867 free workers/tenants. This signifies that just for the agricultural aspect of Isidorus’s business (it is unknown what else he might have been involved in), he must have been directly ‘employing’ at least, in total, some 18,000 to 24,000 individuals, although most probably more, because his herds would have needed tending to as well. Irrespective of the exact number, it is clear that Isidorus would not have been capable of supervising and organising everything personally without a significant amount of managers and/or agents to aid him. This is why the true upper class members can be viewed as resembling ‘companies’ more than ‘individuals’, since like Isidorus, they could employ tens of thousands of workers, and in the case of the emperors probably even in the hundred thousand range. However, it is important to remember that this is more applicable for the structural organisation of the business, as legally it was still naturally a sole proprietorship. As a side note, the example of Isidorus clearly proves what is written in the slavery sections, insofar that the slaves only constituted a clear minority of the workforce (and this as ‘early’ as 8 B.C., while there was a greater abundance of slaves), and that former slaves could amass great wealth, as Isidorus was a freedman. Irrespective of the side note, this section, however, will focus on exploring the role of managers/agents in Roman society both from a legal and practical aspect, in order to show just how structured, organised, and capitalistically-minded the Roman system was.
As an overview, a good general quote about Roman managers taken from Finley, mentions that “management throughout the classical period, Greek as well as Roman, urban as well as rural, was the preserve of slaves and freedmen, at least in all larger establishments, those in which the owner himself did not normally take an active part. That men of the highest status would not and indeed could not devote themselves to managing their own estates and other business affairs is self-evident: their life-style made that impossible, doubly so for the larger landowners, city-dwellers who visited their estates from time to time…Even public administration was problematical below the higher echelons.”

Although this quote depicts very general conditions, it points out two main factors: the first being that the individuals of ‘highest status’ needed managers due to their inability (for a variety of reasons) to conduct the work themselves, and the second being that the majority of managers were slaves or freedmen. Furthermore, regarding the second factor, Finley also writes: “We must then ask why so important a role in the economy—so to speak in more precise ancient terms, in the acquisition of wealth—was left to slaves and freedmen.” Before this second question is answered, the first factor needs to be explained, self-evident as it may seem, due to a variety of Roman literary references where the ‘upper classes’ seem to actually ‘despise’ the managers – a conjecture which can easily be misinterpreted.

There are a variety of Roman literary references where, according to Lowry and Gordon, the landowners “were scornful of shopkeepers or anyone who made his fortune through trade.” Furthermore, Aubert writes that according to “the moralistic writings of the early Empire, institores were despised for their greed, which they allegedly tried to satisfy through speculation and petty trade.” Even though the term institor legally refers to managers, Aubert mentions that “institor, at least in non-technical literature, applies to all persons engaged in commercial activities, regardless of the place—urban or rural areas, or overseas countries—where the operations are conducted.” Therefore, according to this line of reasoning (which some scholars follow) it might seem that the rich upper classes were firstly, hesitant or not willing to employ managers or anybody else who engaged in commercial activities, and secondly, that the upper classes were not interested in making a profit: for example, institores “were notorious for taking advantage of the weak, corrupted youths whom they supplied with superfluous luxury goods, for which they were keen
However, these perceptions are not entirely correct, for as it turns out, what the upper classes might have written or said, had nothing to do with their business acumen. For example, Finley writes that landowners “were of course concerned with the sale of their produce…concerned through their bailiffs and stewards.” A more specific example, mentioned by Aubert, is the case of Cato the Elder “who reportedly engaged in seaborne trade and moneylending through his freedmen while condemning loudly both occupations.” As a concluding remark, it should therefore be clear that even though some upper class writers might have appeared to have had a contentious attitude towards those involved in commercial activities, they definitely used their services nonetheless, and for that matter, extensively. Furthermore, the way that literary *institores* were described - as extremely profit-oriented individuals who attempted to create demand for superfluous products - is definitely a strong sign of a capitalistic system, as such comments could hardly exist in a closed household (or subsistence) economy.

The second aspect of Roman managers is the clear predominance of slaves and freedmen in such occupations. The reasons for this are not hard to understand, and can be summed up as a question of convenience and of legal (historical) nature. The convenience aspect deals with the fact that a slave could not suddenly decide to quit his/her job, meaning that ‘disruptions’ in management structures would occur less frequently than in systems where all managers are free. The second aspect, which is also the main aspect, deals with the legal nature of slavery and the history of Roman agency laws, which will incidentally also explain the nature of Roman managers.

It has to be understood that unlike some authors might believe, the Romans did have agency laws, and for example, according to Temin “the Romans did have a law of agency; it was the law of slavery (and sons). Slavery was the only formal, legally enforceable long-term labor contract in the early Roman Empire…A person with a long-term relation to a principal would be his or her most responsible agent. Hence slaves were more valuable than free men as commercial agents, as shown by the frequent references to literate, skilled slave agents in the surviving sources.” However, even this explanation is not entirely correct: the quote needs to be refined and expanded in order to portray the real conditions of agency laws. The first problem which has already been proven in an earlier section is that slavery was not
the only legal long-term labour contract, and the second is that the Romans actually had more than mere ‘law of slavery (and sons)’ as they actually had indirect agency laws. For this reason, Aubert’s book on “Business Managers in Ancient Rome: A social and Economic study of institores, 200 B.C. – A.D. 250” is instrumental in fully explaining in detail all there is to know about Roman managers and agents.

To commence the exploration, Aubert, citing the Roman jurist Paulus writes that “an institor is an agent appointed to the head of a shop or whatever place to conduct business…Consequently, institores could engage in various activities, such as hiring or renting commodities, facilities, or services, or acting as guarantors. The ground for bringing a legal action against the principal was the transaction (negotium) performed by the agent on behalf of a principal against whom the remedy was given. Paulus stresses that the place (locus) where business had to be conducted had no bearing on the issue: institores could be peddlers calling on the private homes of the upper class.”

Furthermore, Aubert also mentions that “institores were not entrepreneurs, as opposed to slaves with peculium, but managers.” To that extent, it is clear that unlike in literary texts, in legal texts the institores were managers and they could theoretically be placed in charge of any occupation and be found in any location or position. This is the case with most sole proprietorships, by “appointing an institor to the head of an enterprise, the principal was expressing his willingness (voluntas) to have his business run by an agent, and consequently to incur full liability for the legal transactions negotiated by him with third contracting parties, as long as these transactions pertained to the operation of the business. The business managers’ sphere of competence was strictly defined by the scope of their appointment (praepositio).” This means that if the manager or the principal was sued by a third party, the principal would only be liable if the manager had been conducting work mentioned in the praepositio, because the manager – and not the principal - would be liable for any work that was conducted and not mentioned in the praepositio. This is can be viewed as a general condition, although naturally side-stipulations can be made: for example, the principal could have been liable under the condition that he was aware of any side-work that the manager was doing and possibly even getting profit for. However, it falls outside the scope of this paper to go into all of the possible technicalities. It is important to remember that there were seemingly few hinderances restricting managers from conducting, on their own initiative, side-work
for themselves: at least no restrictions beyond having the time to do side-work and being liable for it. To that extent, there is the example of a slave manager who “had been appointed with the purpose of lending money on security. On his own initiative, he was also dealing in the capacity of middleman between barley sellers and purchasers, and was shown to have been involved in renting storage facilities.”

This aspect is important to understand, as it partially explains why some former slaves had not only achieved wealth directly through their role as managers, but also on the side, often even using their ability to use the extensive connections and strength of the ‘organisation’ they worked for. Even though in modern thinking this might have caused a conflict of interests, in the Roman system this conflict was probably much weaker, primarily since the majority of managers were slaves and their primary motivation would have always been to please their master. For example, the cited slave manager placed in charge of moneylending eventually failed in his side-work with barley and was subsequently sued by a third party; however, there is no mention of failure in the moneylending business. This is not to claim that slave managers never failed, or never put their own interests above that of their masters’, but as a general rule it does not seem to have happened for obvious reasons which deal with the nature of slavery. Incidentally, this aspect also leads into why slaves were most often used as managers.

However, the main reason, as Temin correctly writes, that slaves were used as managers was that Roman law lacked sufficient legal stipulations to allow non-slaves or non-family to function fully and completely as managers (at least until the Principate). In essence, “Roman law lacked the concept of direct agency. Short of reversing this situation, the praetor responded to the needs of businesspeople by creating a legal system based on existing structures of Roman society (slavery and the unitary character of the family), with advantages similar to those which direct agency would have offered. This solution provided the elite with a way of skirting the social prohibition against becoming personally involved in business ventures, as had been enacted through statutory law in the late third century B.C. In addition, it established the legal basis of a managerial system which made possible and profitable the extension—both in terms of geographical location and scale—and the diversification of business enterprises.” This meant that when “the agent was a dependent—slave, descendant, or wife—of the principal[(master/paterfamilias)], the relationship was
non-contractual and was based on the power (*potestas* or *manus*) that the principal had over his dependent.” Furthermore, dependents “were normally deprived of property rights, and, except for sons, of juristic personality. Consequently, dependents could not obligate themselves toward their master/*paterfamilias*, nor toward any other person, but they could acquire property through formal conveyance (*mancipatio*), will, and through informal procedures (*occupatio, possessio, traditio*) for the sole benefit of their *paterfamilias*…Acquisitions through a slave or a family member on behalf of the *paterfamilias* were so easy and so common that there was no need to depart from the ancient rule.” This is the main reason why managers were often slaves (or other dependents), as no contract between the principal and the dependent was required, and when the dependent dealt with third parties it was automatically implied that the dependent was working for the benefit of the *paterfamilias*, which was extremely convenient. Furthermore, any disagreement between principal and dependent “did not give rise to a remedy and could not be settled in court. It was merely a family matter.” This is however not to imply that it was impossible to have a contract between dependent and principal, as “any transaction between principal and agent could give rise on either side to natural obligations, which could have some consequences after the agent’s emancipation or manumission. This is probably the reason why some master-slave relationships are sometimes described in legal terms.” As a general conclusion, therefore, it should by now be evident from a very basic historic viewpoint why the majority of managers were slaves: it is due to the sheer simplicity of conditions between dependents and principals - conditions that did not exist between extraneous agents (non-dependents) and principals, at least not at the beginning. Unlike a variety of authors seem to believe, Roman law was not static, and while initially extraneous agents were not capable of functioning to the full capacity that managers as dependents might have, this would change. However, before this is explored, there is one last aspect about dependents which needs to be explained.

The more astute readers might have noticed in the earlier quotation that dependents could not obligate themselves to third parties and also that “in order to protect the *paterfamilias* against the consequences of unwanted initiatives on the part of his dependents…Dependents could better, but not worsen, the situation of their *paterfamilias*.” “This loophole in the legal system, which was detrimental to third
parties, was recognized at an early stage and corrected through the intervention of the praetor who granted to third contracting parties a set of five legal remedies (called by modern scholars *actiones adiecticiae qualitatis*) available under special conditions.”

To fully explore and explain each remedy would lie outside the breadth of this paper, but in bullet form these were:

- **Actio quod iussu**: “According to the terms of the praetorian Edict, principals (masters/paterfamilias) who had authorized third contracting parties to do business with their dependents were liable for the whole debt arising from the agent’s transaction.”

- **Actio institoria**: “The *actio institoria* was based on the idea that principals who benefited from the transactions of their dependent business managers should also incur liabilities arising from them…the principal who had appointed an agent (*institor*) to run his business expected him to negotiate contracts with customers, suppliers, and contractors, in a specifically designated place (estate, workshop, store, or any other facility) or elsewhere, and accepted full liability for the transactions performed by his agent on the basis, and within the scope, of his appointment (*praepositio*). Consequently, the third contracting parties were given a legal remedy against either the agent or the principal.”

- **Actio exercitoria**: “the principal/shipper (*exercitor*) who had appointed an agent/shipmaster (*magister navis*) to be in charge of his ship was fully liable for the transactions performed by his agent. The ship could be of any size and operate on the sea, on a lake, or on a river. It was not necessary for the shipper to be the owner of the ship.”

- **Actio de in rem verso**: “A contract negotiated by a dependent agent acting without specific or general instructions (*iussum* or *praepositio*) could benefit his master/paterfamilias without binding him to fulfill the obligation’s derived from this contract. The benefit taken from the dependent’s transaction was similar to unjustified enrichment, and consequently the praetor gave third contracting parties a legal remedy against the principal to the extent of the latter’s enrichment, or rather what remained of it at the time of the litigation. This remedy, which was perpetual, seems to have been available only when the *peculium* of the dependent was nonexistent, empty, or insufficient. It was
exhausted when the third contracting party had brought an *actio de peculio* which resulted successfully in the repayment of the benefit taken.”

- **Actio de peculio**: “Dependents were incapable of ownership, and consequently litigation arising from their business transactions—provided that they were valid—could at best result in the grant of an unenforceable judgment. Thus, third contracting parties dealing with dependents had no legal protection against either agent or principal until the praetor decided to recognize the juristic existence of fictitious assets (*peculium*) pertaining *de facto* to the dependent, but belonging *de jure* to the principal. Subsequently, third contracting parties were given a legal remedy against the principal, whose liability was limited to a sum equivalent to the value of the dependent’s *peculium* at the time of litigation.”

In essence, third parties also received protection through these legal remedies and the issue of liabilities was cleared up. Furthermore, it is evident that some of the legal remedies did not only pertain to dependents, but could also pertain to extraneous agents. As already mentioned, in the same way that the law developed regarding dependent agents, it also developed with regard to extraneous agents. In essence, a brief historic overview of a transition in law concerning extraneous agents commenced with the fact that initially, “the Romans could not acquire ownership or possession through an extraneous agent. Exception to this rule appeared as early as the Republican period…purchases made by freedmen mandated by their patron belonged automatically and immediately to the latter. At the end of the first century A.D…acquisitions of possession and ownership through *procuratores* or guardians was valid. A century later, the reform was completed and all extraneous agents could acquire possession for their principal, even though the latter was unaware of it. By the same time *procuratores* and mandataries could also receive valid payments from the debtors of their principals…[however,] extraneous agents could not validly transfer their principal’s property without their explicit and specific authorization, and only through informal conveyance.”

Conclusively, this means that extraneous agents attained similar capabilities as did dependents in the representation of their principal, by approximately the middle/end of the 2nd century A.D. Why a variety of scholars have missed this fact is not clear because in truth, although laws were not yet fully developed, there is evidence that even extraneous agents were used during the
last moments of the Republic: “Cicero, for instance, often alludes to extraneous agents
(liberti, procuratores) working side-by-side with dependents (familia) for wealthy
businessmen, such as A. Trebonius, L. Lamia, and L. Bruttius, known to have had
important commercial interests in the provinces.”

Once more the conclusion can be brought forth that the Roman system has generally
been underestimated, and that Roman agency laws were far more complex than
widely believed because they allowed not only dependents, but also extraneous
individuals to conduct the functions of an agent. Furthermore, it is evident that
Roman society, as the case of Isidorus shows, was heavily dependent on agents in
order to function properly. The vested business interests of the truly rich were located
in too many industries, and too many geographical locations for only one person to be
directly involved. It was therefore the domain of the various agents and managers, be
they institoris, exercitors, or even the other forms of business contractors like
mancipes, conductores, redemptores, etc. Furthermore, in that regard, agents
“could also appoint a subagent, provided the (sub-) appointment was not in
contradiction with the terms of the praepositio and that the principal knew of it, and
consented to it”, which meant that these organisations could grow very large with a
variety of managers and sub-managers at various locations, without too much effort
on the principal’s part. Additionally, it has to also be clear that the agent’s primary
function was to create profit; for example, Aubert writes that profit-making “was the
raison d’etre of an instititor, and [that] this fact is supported by Paulus’s statement.”

It is exactly this aspect which clearly proves the capitalistic tendencies of the Roman
economic system, for why would a closed household, or subsistence economic system
want agents whose primary goal was to create profit? In that regard how can their be
profit in a subsistence economy? The answer can only be that the Roman system was
a capitalistic system, for otherwise how is it possible to explain a multitude of large
organisations employing tens of thousands of workers whose primary function was to
create profit? This is not to claim that only large organisations could have managers,
as anybody who had sufficient funds could have a manager - this is known in the case
of some shopkeepers. However, putting the profit aspect aside for a moment, by
looking at legal texts it becomes clear that the sophistication only proves capitalism
and not vice versa. For example, each organisation was structured in the way that
each agent would be placed at the head of an enterprise, be it of whatever kind
(“fundus, hortus, figlinae, officina, taberna, caupona, mensa, statio, mansio, mutatio, deversorium, insula, domus, horreum, balneum, pistrium, [navis], etc.”\textsuperscript{358}) and conduct business. Basically, in “Roman times, an enterprise was an economic unit oriented toward the production of goods or services, and was composed of one or several persons using capital in order to make a profit, or at least to provide for the needs of the entrepreneur. This capital included a place and means of production, a staff, and raw material. It was either owned by the entrepreneur or taken on lease.”\textsuperscript{359} Furthermore, a “business (negotiatio) could be divided into several units of production/distribution (branches or outlets)...[and] Ulpianus considers that they should be regarded as separate managerial units with distinct accounts.”\textsuperscript{360} All this evidence can only point towards capitalism, especially since the definition of a Roman enterprise mentions that it was an economic unit using capital in order to make a profit, i.e. the basic definition of capitalism.
Roman Primary Sector

*Introduction*

If there is any area of the Roman world which has been extensively researched, it would be agriculture. This does not mean to say that light has been shed on everything there is to know or that there seems to be a consensus in the matter amongst scholars, because much as like for other areas, there exists a wide-ranging array of theories in the subject of Roman agriculture. The main divergence in theories appears to stem from two main points: firstly, the failure to appropriately understand that the Roman Empire, though one political unit, was geographically very large with a variety of both land types and labour, and secondly, the failure to comprehend that agricultural development was not static (at least until the 3rd century A.D.). This means that when examining Roman agriculture, it has to be considered over a larger time-span and in relation to all of the provinces in order to make a make a correct assessment. This process, however, falls outside the scope of this paper, and as such, a more generalised viewpoint will be explained. In some respect this might appear to imply that the same ‘mistakes’ will be made which some scholars have previously made. For this reason, as a general rule an attempt will be made to correctly assign information to its right time and place, and to then explain why it could apply to other regions of the empire.

As a general rule, this section will explain how Roman agricultural and rural areas functioned economically and how they developed over time. In particular it should become evident that Roman agricultural techniques and technology before the 3rd century A.D. reached standards similar to those of western nations in the 18-19th centuries, which signifies that the Roman economy could be neither a subsistence nor a closed household economy.

*Rural and Agricultural Labour Background*

*Slavery from an agricultural perspective*

As already proven in the slavery section, the predominant type of labourers were not slaves but free individuals, and this definitely also applied to rural labour. The actual
reason why some scholars believe otherwise, is due to conditions in Italy after the eventual defeat of Carthage and the subsequent extensive territorial expansion well until the end of the Republic. This is not to imply that expansion ceased during the Principate, as it most definitely continued until Hadrian: however, in relative terms, the expansion during the Principate was less significant. In essence, from approximately 220 B.C. to 25 B.C., the Romans had increased their territorial size from approximately 360,000 km² to 2,750,000 km², while by the end of the 2nd century A.D. the empire had increased to approximately 4,500,000 km² (at the end of Trajan’s reign it was actually larger, but Hadrian lost some territory which was never regained).³⁶¹ This meant that from 220 B.C. until the beginning of the Principate, in relative terms, Roman territory expanded by a factor of 7.6, while during the first two centuries of the Principate it ‘only’ increased by a factor of 1.6. This is important to understand because it will disprove the scholars who believe in a slave-mode of production during the Principate. In truth, since conquests were the main source of slaves³⁶², it was certainly possible that for a specific moment during the Republic (possibly between 135 – 71 B.C., during the three major slave uprisings³⁶³), at the absolute height of slavery, and only for certain parts of Italy (like Sicily³⁶⁴), that slaves might have actually constituted the majority of the workforce; however, once the conquests abated this would have changed. It is therefore not possible to transpose one ‘moment’, as some scholars seem to do, to the entire Roman Empire centuries later. For example, according to Scheidel, “conquest was heavily concentrated in the last two centuries BC, a period in which Italy occupied a privileged position: Roman citizen status was largely limited to free residents of this region; the entire political leadership and most of the military forces hailed from Italy; income from war plunder, provincial tribute, and public and private rents was primarily spent in the peninsula; and the imperial heartland was progressively freed from regular taxation beyond conscription.”³⁶⁵ This means that the wealth accruing (including slaves) from the 7.6 factor growth would have all been directed to Italy which is worth keeping in mind as the empire was definitely not as italocentric during the Principate, and the conquered wealth would not have solely been directed towards or stayed in Italy. In fact, over time, irrespective of some attempts to halt the process, Italy would eventually fully lose its primary position within the Empire by the 3rd century A.D. Even though the full examination of this aspect falls outside the scope of this paper, this aspect of Italy’s predicament will become evident in this and
subsequent sections. Additionally, the factor growth corresponds to territory, and it would be more apt to focus on the conquest of slaves, where according to De Martino, from Augustus to the end of the Principate it was rare that large ‘conquests’ took place which could have brought in a large amount of slaves - the main exceptions being, for example, the conquest of Britain (43 A.D and further), the Jewish (66-73, 115-117, 132-135 A.D), and the Dacian (101-102, 105-106 A.D) wars.\textsuperscript{366}

Therefore, as a general conclusion, and according to Hammond, two main aspects must be kept in mind: that during the end of the Republic and first century of the Principate when slave-run estates appeared to be the norm, this only applied to Italy, and furthermore, the individual peasant never disappeared - even this aspect of Italy being solely run by slave estates is questionable, at least as a whole (some Italian regions might have had a predominance of slaves)\textsuperscript{367}. Secondly, irrespective of this, these supposed slave estates definitely disappeared by the second century and the predominant form became the tenant estates.\textsuperscript{368} As a further proof, one can take the earlier cited freedman Isidorus, who was heavily involved in agriculture and who employed approximately 4,000 slaves from a total of 18,000 ‘employees’ in 8 B.C, which means that ‘only’ some 25\% of the workforce were slaves, which is not sufficient enough for a slave-mode of production (although its possible that more slaves were employed, as some tenants could have had slaves as well).\textsuperscript{369} However, this is not to imply that slaves were inconsequential, or that there were no estates where the labour force might have been predominantly servile, it is only important to remember that as a general rule for the Roman Empire as a whole, slaves were ‘secondary’ and the main labour force were the free tenants and labourers. Additionally, the usage of slaves from the end of the Republic throughout the Principate was, in relative terms, in a steady decline, as exemplified by the ‘clear’ switch to tenant estates by the 2\textsuperscript{nd} century A.D. According to De Martino, this is proven furthermore by the fact that neither natural procreation amongst slaves nor any other form to acquire slaves\textsuperscript{370}, could have sufficed to fill the gaps arising from a cessation of conquests, irrespective of the fact that some authors attempted to do so on account of slave breeding comparisons with the U.S.\textsuperscript{371} That De Martino must be correct is not hard to prove considering the high Roman manumission rates, easily 50 times those of the U.S.\textsuperscript{372} This is, however, not to imply that the Romans never ran out of slaves, as slavery existed well until the very end of the Roman Empire\textsuperscript{373};
however, it does serve to claim that the pinnacle of slavery, in relative terms, had been reached during the Republic and was on a steady decline thereafter.

Irrespective of the fact that slavery was on the decline during the Principate, its importance was still sufficiently significant, and according to some authors this meant that since slaves and free labourers competed in the same market, the wages must have therefore been ‘low’. The general problem with such assessments is the question of relativity, i.e. in comparison to which conditions are Roman wages low? A general problem seems to be that a large number of scholars have a tendency to assume that slave labour is cheap, which is not necessarily the case because it naturally depends on supply and demand conditions. Scheidel explains it best when he writes that in “the most general terms, the emergence of large-scale slavery across economic sectors depends on two fundamental preconditions: (1) a relative shortage of labor (i.e., of labor relative to exploitable resources), and (2) access to slaves.”

Specifically regarding the Romans, he writes that “high real wages and low slave prices precipitated the expansion of slavery in…Republican Rome, while later periods of Roman history may have witnessed either a high-equilibrium level of slavery or its gradual erosion in the context of lower wages and higher prices.” That both conditions applied in general to Italy during the Roman Republic is firstly clear from the abundance of captured slaves (thereby lowering the price of slaves), and secondly, from the ‘drain’ of local free Italian labour forces (thereby lowering supply of labour). This drain came about due to “war-related demographic attrition, emigration and the urban graveyard effect” In particular, the high rate of military mobilization rates, of approximately 15% of Roman males from 200-30 B.C., the deaths from wars (both internal and external), the insurrections (the three slave uprisings), and the emigration to the newly conquered territories would have caused a drain on labour not existent to that extent during the Principate. Emigration naturally still existed in the Principate, but it is highly doubtful if it was as strong as it was during the Republic, where for example, from a period of 48 to 14 B.C. (early onset of the Principate) at “least half a million people must have permanently left Italy”, and additionally, mobilization rates declined steadily from 15% to 0% from 30 B.C-100 A.D, meaning that Italians were no longer in the armed forces (they had been taken up by provincials at that point). Furthermore, all of the wealth accruing from conquests during the terminal phase of the Republican period was entering Italy, which led to a “massive
redistribution of financial resources from Roman elites and provincial subjects to large elements of the Italian commoner population...[which] raised average household wealth and improved average well-being” 381. To that effect, the combination of rising average wealth and the ‘drain’ on free labour must have caused available free labour in Italy to become more expensive, at least in relative terms when comparing it to the Principate, and furthermore, since Italy basically had to produce not only for its war machinery, but also initially supply a variety of agricultural and industrial products to the newly conquered territories (which is yet to be shown in subsequent sections), it would have meant an actual increase in demand for labour. As a general conclusion, therefore, for the mid/end of the Republic period, it is clear that there was a significant increase in slave supply at the same time that there was a significant decrease in available free labour 382 during a period when the demand for labour was increasing. As such, it is no wonder that the Republican period in Italy saw the emergence of slave-estates, just as it is no surprise why during the Principate, after the cessation of major conquests and Italian mobilization (especially at the onset of the 2nd century), these slave estates seemed to disappear: it was simply a question of supply and demand. This is, however, not to claim that these were the only forces at work, as for example, there certainly could have been some immigration into Italy during the Principate (as shall be explained in the ‘Industry’ section), but the afore-mentioned forces were by far the most powerful. With respect to wages and labour, it should be clear that had there been no slaves, the lack of sufficient free labour and high labour demand would have most probably raised wages significantly in Italy, but since labour immigration existed in the form of slavery this did not occur, at least not to a great extent. Even though no clear wage statistics appear to exist which would allow conditions to be compared, it is actually most likely that even with the influx of slaves, wages did continue to increase slightly and were definitely higher in comparison to the provinces, especially those provinces that were less developed. This aspect will become more clear in subsequent sections, but for now it is sufficient to understand that generally, slavery did not cause wages in Italy to be ‘low’ like some scholars believe, but that it actually hindered wage rates from ‘exploding’ upwards, and that when the Italians finally ceased their mobilization and extensive emigration during the Principate, slavery became less important as a ‘force of wage stability’ due to an increasing local free labour supply (beyond the fact that new slaves were hard to come by). However, this is not to claim that wages never dropped
to low levels - they most probably did in some areas, especially when slavery reached its peak - but as a general trend, especially during the Principate, evidence seems to suggest that Italian wages were generally higher than those in the provinces.

The only question which remains open is what happened with regard to slave labour in the other provinces? Unlike Italy, no other province ever became so ‘dependent’ on slave labour, primarily since there never seemed to be a real need for it because labour conditions in the provinces were not as ‘extreme’ as they were in Italy during the expansion. To that extent, the main factor that would have dictated wages would tend to have been tied to how ‘developed’ the province was: the richer, urbanised and more sophisticated provinces most probably paid higher wages. This fact should be evident without needing to resort to any statistics, as history has generally proven this aphorism over and over again, and furthermore, the subsequent sections will portray the same.

**Agricultural Workforce**

During the Principate, both the provinces and Italy predominantly used free labour to work in their agricultural areas. This came in four main forms: 1) either as ‘owners’; 2) as tenants; 3) as labourers, especially during ‘peak’ agricultural periods (e.g. harvesting); or 4) as external contractors. Although slaves were not the predominant mode of labour they could naturally, as has often been explained, also be found in any of the four forms; however, in order to be an owner, tenant, or contractor they most probably needed to have a *peculium*, while this would not have necessarily been required if they were labourers.

**Owners & Family**

Even though initially, it had seemed that the small and middle-sized landholders had disappeared in Italy and even in the provinces (for the most case), it has been nearly unanimously discovered that this was not the case. A variety of scholars mention that although landholding as a general rule became very concentrated, i.e. that extremely large amounts of land came into the possession of a few extremely rich individuals, the small landholding/peasant household and the middle-sized estate never truly disappeared. For example, Kloft writes that archaeological research shows that well into the Principate the small landholder/peasant still existed as ‘he had done
before’,\textsuperscript{384} and that the small, middle, and large landowners existed side-by-side. Furthermore, veterans were often granted land upon ‘retirement’ in Italy (c.a. 10-50 \textit{iugera} = 2.5-12.5 h.a.) and even more so in the provinces, which was then either sold or further land was purchased, the veterans, thereby, becoming either small to middle-sized owners.\textsuperscript{385} Regarding competition with slaves, De Martino, writes that although the slave system was very strong in Italy, it did not hinder the many free small farmers to exist as owners or tenants.\textsuperscript{386} Scheidel provides even more evidence, and writes that archaeological “field surveys have established a bewildering complexity of trends in land use, with a decline of small farms in some areas and their spread in others.”\textsuperscript{387} To that effect, De Martino mentions that the concentration process of land did not make the small and middle-sized estates disappear; this can be inferred from the \textit{alimenta} documents from Trajanic times and archaeological evidence from Pompeii, which depict the existence of estates in the sizes of 10, 15, 40, 80, and 250 \textit{iugera} (and any other sizes between these).\textsuperscript{388} All of this leads to the unviable conclusion that neither the small nor the middle sized landholders disappeared, irrespective of the fact that some regions in the Empire ‘seemed’ to belong to a few rich landholders. However, this is not to imply that there was no concentration of landed property: for example, according to De Martino, after the time of Tiberius there seems to have been an ever increasing expansion of imperial property in Italy,\textsuperscript{389} and under Nero half of Africa supposedly belonged to only 6 large landowners.\textsuperscript{390} Furthermore, De Martino mentions the alimentary evidence of Veleia and Benevent (two Italian towns/cities), which show that between Augustan and Trajanic times the number of landowners had decreased, and the size of the estates had grown. For the former the original number of 323 estates declined to 52, and for the latter it had dropped from 98 to 50. In total, the value of the land in the first document was 13,500,000 \textit{sesterces}, and if a price of 2,000 \textit{sesterces} per \textit{iugaram} (most probably an ‘average’ price for the time) is taken, it would have implied 6,750 \textit{iugera}. The largest property had a value of 1,600,000 \textit{sesterces}, which would correspond to 800 \textit{iugera}, and the smallest was 50,000 \textit{sesterces}, meaning 25 \textit{iugera}. The second document mentions the largest property at 500,000 \textit{sesterces}, 12 estates lay between 500,000 and 100,000, 17 between 100,000 and 50,000, 20 between 50,000 and 15,000 \textit{sesterces}.\textsuperscript{391} According to Aubert, it is without doubt that private agricultural estates became very large during the end of the Republic and the early Principate,\textsuperscript{392} thereby possibly achieving economies of scale and/or scope (which shall still be explained in subsequent sections) - something that
small landholders could never achieve. That some landholdings became very large should come as no surprise, considering the capitalistic market economy which the Romans had (land could be freely bought or sold), but once more it has to be clear that not all of the land was in the hands of the wealthy: some of it remained in the hands of the ‘peasants’ and middle classes even though their number had actually decreased in some areas (probably the most fertile areas), relative to conditions during the mid-Republic.\textsuperscript{393}

The effect and importance of this fact, is that there was still a sufficient amount of ‘peasants’ working in their own fields, while in contrast, during the end of the Republic and especially during the Principate the larger landowners preferred to let their managers attend to the running of their estates. These ‘absentee’ landowners, it seems, became very common by the 2\textsuperscript{nd} century A.D\textsuperscript{394}; however, judging from the fact that some of these landowners had vast amounts of land in various provinces, one can hardly blame them for being ‘absent’ as it would have been impossible for one person to be physically located at the same time in areas that were possibly hundreds of kilometres apart. However, the point of interest in this case are the small/middle landholders who actually often worked in their fields together with their families, and unlike some scholars would like to claim, not all of these were ‘subsistence’ farmers.

Middle-sized estates cannot be seen as subsistence farms, as it was easily possible for the owners of these farms to actually lease the land to tenants, and according to Kloft this was essentially carried out in all of the provinces.\textsuperscript{395} The fact that they could live off the lease without doing any work themselves, suggests that the owners (and their families) of middle-sized estates cannot automatically be considered to be subsistence farmers, and even though it is not exactly known what would count as middle-sized (most probably depending on the time and province in question), Kloft mentions that many veterans were capable of leasing out their property, which suggests a size commencing from approximately 25-50 iugera.\textsuperscript{396} Furthermore, irrespective of whether the middle-sized estate was leased out or not, De Martino mentions that middle estates were run on rational grounds with intensive agriculture for the purpose of a market, much like the larger estates (this aspect will be covered in a subsequent section).\textsuperscript{397} The only question remaining is whether the small family-run farms were subsistence farms.
The general answer to this is that most of the small farmers were not subsistence farmers. While it is certainly possible that some regions had subsistence farms, it cannot be claimed that the entire agriculture was subsistence. Erdkamp explains it best when he writes that it “should not be concluded from the inflexibility of the balance between land and labour that peasants and small farmers generally could not make a living from their land (although sometimes this undoubtedly happened), but rather that they could not optimize their labour productivity because of limited access to land and capital. There were two options for farmers who were confronted with an excess of labour capacity: either they could intensify their agricultural practice or they could employ part of their labour outside the farm.”

Another way to explain the situation is firstly to look at an example from De Martino, who mentions that peasants had difficulties making a profit and that the times made it difficult for small landholding to prosper; however, he does not mention that it was impossible, or that the peasants were merely subsisting. Secondly, Finley can be examined, who writes that the “one normal source of subsidiary income for peasants was seasonal labour on larger neighbouring estates, especially during the harvest: the Roman agricultural writers assume, and indeed, require, the presence of such a reserve labour force in all their calculations.”

If De Martino’s and Finley’s example is taken in conjunction with reference to Erdkamp’s earlier quote, it can only be evident that as a general rule the peasants were not subsisting. If De Martino mentions that peasants could live off of their land, even though they would have been having a hard time making a profit, and that Finley mentions that peasants could earn some ‘extra’ money during harvesting periods, it becomes evident that even if De Martino’s peasants are subsisting, the moment they go and work for a third party and make money they have gone beyond a subsistence level, as that ‘extra’ money is more than subsistence. A specific example of small farmers working for others comes from Heitland, who writes that there “is no reason to think that latifundia ever swallowed up all Italy, and it seems certain that in the hill country, among the dalesmen, small farming and simple virtues were still at home…From such districts came the gangs of farm-hands of whom we hear as migratory labourers”.

This was, however, not the only option small farmers had for gaining extra cash, as there were opportunities for them to work in the industrial and/or service sectors. To that extent Viswanath citing Safrai, mentions that “the accepted reality was usually that the farmer also functioned
as an occasional artisan or laborer and at least part of his time was devoted to non-agricultural work.” A specific example of non-agricultural work is also mentioned by Erdkamp, who writes that “in many places the goods had to be hauled overland from one river to another, which was cheaply undertaken by seasonal labour. Because of their need to employ their labour and that of their animals throughout the year and the limited ways of doing so, the farmers would undertake almost any transportation they could get. Any gains were profit. Unlike professional transporters, it was not their primary means of subsistence.” The full examination of non-agricultural side-jobs for small farmers will be conducted in the respective sections, but it should be clear that farmers had various options at their disposal.

It is important to discuss is Erdkamp’s notion of subsistence since in general, although he often mentions various possibilities for farmers, he still tends to use the term subsistence farmers. Firstly, Erdkamp explains what a subsistence farmer is, in that a “subsistence farmer could choose the option of achieving his subsistence requirement through the market. This concept may be rather surprising to some ancient historians, who are used to assuming a strict division between subsistence farmers and market-oriented farmers. ‘Subsistence farmer’ means a farmer whose primary aim in agricultural production is the stable and secure fulfilment of the requirements of the household. [(1)] (The household may not be equal to the number of people working the land, because of the possibility of household members who employ their labour outside the farm.) [(1)] To achieve this, the household can fulfil its needs directly, or it can produce something that is exchanged to meet these needs. The difference from the commercial farmer is that the goal is not optimization of the output of capital or land, though one would of course not object to achieving this.” The part of the quote to focus on is between the [1]’s as it clearly seems to state that those who worked outside the farm, for whatever purposes, were not subsistence farmers which is exactly what has been mentioned earlier in this paper. Secondly, Erdkamp writes that the “subsistence peasant, whose primary aim was to produce his food requirement, was limited in diversifying the tasks on his farm. The commercial farmer was in a better position, but even he was confronted with the need to acquire external labour during the harvest period, while having excess labour at other times of the year. The peasantry had little access to external labour; on the contrary, smaller farmers often contributed their labour to the harvesting on large estates. Therefore,
peasants and small farmers, who did not hire day-labourers, had to have at their disposal the human and animal labour required to work the land at peak times. This resulted in a significant seasonal underemployment of their labour on their own farm. Furthermore, it “was not only seasonal underemployment which governed agriculture in the ancient world, but also structural underemployment as far as those peasants and small farmers who had limited access to land and could not easily adjust their labour capacity to the land they worked are concerned. This excess labour capacity, though still totally or partly dependent on agricultural production for its sustenance, could be employed in economic strategies away from the farm.” This second and third quote essentially demonstrates that the average ‘subsistence’ farms had excess labour capacity for much of the year, and as the earlier paragraph mentioned, they could/would employ this excess in various other types of jobs. The problem about calling such conditions subsistence stem from two main reasons: the first is that Erdkamp himself mentioned that those who worked for third parties while also working on their own farm most probably were not subsistence farmers anymore, and secondly, there is a large question of relative to what?

The simplest way to explain this is through an example. Land-plot A is a land which just produces, per year, enough for a family of 10 to subsist (what and how is unimportant for this exercise). Land-plot A exists in a world of a closed household system, meaning that there are no markets, and no opportunities for the members to find a job outside of the farm. In some regard, Land A can be perceived as the most ancient form of farm. For the sake of demonstration, Land A now skips several centuries into the future, and finds itself in the Roman Empire during the Principate where markets and external employment opportunities exist. The land has stayed exactly the same regarding its size and yield. The question therefore, is how can it be that a land on which 10 members were capable of subsisting before ‘the market’ came into existence, can still be considered a subsistence farm, now that the 10 members can still subsist on it (as nothing has changed) and also work for third parties for additional income? The answer can only be that the moment any of the members works for a third party, that particular individual ceases being a subsistence farmer (or the household if the individual brings the money back to the household). As such, it is not clear how the household or the individual can still be called a subsistence farmer, since he/she is ‘suddenly’ capable of earning more than subsistence. There is
actually only one way that this is possible, and this is the question of ‘relativity’. The 10 members on Land-plot A, realising that until ‘recently’ they could only produce enough to subsist, are aware that with the opening of the market and external opportunities, they can step beyond subsistence. They do so, but because they suddenly are aware that they can have more ‘food and shelter’ than before, they are also able to have more members living off the ‘same land-plot’. As such, the household number increase to 15, and at that point, unless the 5 new members are capable of also finding external work, the average standard will fall for the original 10 members (all else being equal). At this point it is very possible that the original 10 would live on a level of subsistence again, but the difference from the first moment to this moment is that there are now 5 new members. The question therefore, is how can both cases be called a subsistence economy, and both imply the same issue? In one case, on the exact same plot of land with the exact same yield, only 10 members could subsist at best, while in the second case due to an open market with external employment possibilities, 15 could subsist at best (if the ‘new’ 5 cannot find employment, or do find jobs, but due to a greater number of available workers the jobs are paid less). To call both cases a subsistence economy would be very misleading, especially since in order to get to the ‘next’ level of subsistence the original 10 actually went beyond subsistence for a while. That is exactly why the moment that a market and external possibilities for making ‘additional’ money exist, one cannot be functioning within a subsistence economy: this is the very condition in which the Roman Empire functioned, irrespective of the fact that some households still lived on a level of ‘subsistence’.

As a conclusion for this section, it should be clear that first of all, there were still a significant amount of small landowners and their families who not only farmed on their own fields but also often worked for third parties, be it in agriculture, service or industry. To that extent, for example, Erdkamp disagrees with Finley’s theory that the “masses in antiquity was one of peasants, not of wage labourers,…[but that] the large mass of rural people, for whom agriculture was the main basis for survival, may rather have created a significant sector of wage labour.” Furthermore, this was a condition not only existing in Italy but throughout the entire empire, as almost all of the scholars cited in this section attest to it. Secondly, even though some of these peasants could have actually lived on a subsistence level does not mean that the
Roman economy was subsistence because it has already been proven that it is possible to live at a subsistence level in a market economy. To that effect, the easiest way to prove that it was not a subsistence economy is if there was any population growth in the Roman Empire. Even though no real data exists, by examining various scholars, Scheidel comes to the conclusion that there was an unquantifiable but definite increase in population (at least until the Antonine plague in 160 A.D.). The question which will be left for later is whether the population growth ate into income growth, i.e. as in the example, did the theoretical household of 10, once it reached 15, go back to the same average ‘standards’ of living as before the growth or not?

**Tenants**

As mentioned earlier, for Italy (especially by the 2nd century A.D.), but also for other provinces during the Principate, the tenant-estates became (or were from the beginning for some provinces) the predominant form of estates throughout the empire, at least when it came to the amount of land cultivated under the tenant system. According to Temin, “the largest group of free workers was farmers. Many of them were tenant farmers, although we should remember that employment categories in the countryside were quite fluid. Roman tenancy contracts allocated risks between landowners and tenants in very much the same way as analogous contracts did in the 18th and 19th century England. Major risks were borne by the land-owners as events beyond the tenants’ control, while minor risks were borne by the tenant in return for the opportunity to earn more and keep his earnings: Force majeure ought not cause loss to the tenant, if the crops have been damaged beyond what is sustainable. But the tenant ought to bear loss which is moderate with equanimity, just as he does not have to give up profits which are immoderate. It will be obvious that we are speaking here of the tenant who pays rent in money; for a share-cropper (partiarus colonus) shares loss and profit with the landlord, as it were by law of partnership”.

Not only was the risk allocated by the tenancy contracts analogous in some ways to 18-19th century English contracts, but according to Viswanath, who actually examined Roman Palestinian tenancy contracts (from which can be inferred that tenancy contracts seemed nearly identical empire-wide), “this feature of the rental contract can be easily explained as the optimal rental contract in an economy characterized by tenants whose income sources are diversified.” The normal lease period was 5 years and the rent was a yearly fixed charge. The tenancy rental fee could be paid through monetary
means, in kind, or a mix between the two (as has been mentioned in an earlier section). However, it is important to note that the vast majority of contracts, at least during the early Principate (until the end of the 2nd century A.D.), according to the Roman jurist Gaius, were paid predominantly through monetary means,\textsuperscript{413} which once more proves a monetary economy considering the large number of tenants that existed during that period.

Regarding the status of tenants, as Temin mentioned, they were generally free individuals (but could also actually be slaves, most probably with a\textit{ peculium}), who were bound only by contractual relationship, meaning that they could leave the land if they desired and look for better conditions elsewhere, i.e. they were not serfs. In fact, according to De Martino, due to economic and structural difficulties in the 3rd century A.D., tenants were constantly moving to look for better conditions. This caused a change in the laws since the landowners were then left with nobody to cultivate their lands; by the 3rd/4th century A.D. tenants became tied to the land, thereby becoming serfs.\textsuperscript{414} However, this falls far outside the relevant timeline of this paper, but it explains the advent of serfdom, and the possible confusion that arises amongst some scholars pertaining to the term for tenant (\textit{colonus}) changing its meaning over time, since “the free \textit{colonus} of the second century sank into the tied serf \textit{colonus} of the fourth.”\textsuperscript{415} This signifies that the \textit{colonus} of any time prior to the 3rd/4th century A.D. and mentioned as early as the Republic,\textsuperscript{416} was a free tenant, capable of choosing where to work (naturally still under contractual obligations).

As to the actual size of the tenancy, it depended on the contract in question. Small, middle, or large-scale tenancy was possible and it depended on the size of the land leased out to the tenant.\textsuperscript{417} Furthermore, it is important to know that the largest of tenants, the ‘chief-lessees’, were called\textit{ conductores} and not\textit{ coloni}.\textsuperscript{418} According to Heitland, the\textit{ coloni} were actually subtenants of the\textit{ conductores}\textsuperscript{419} (which does not necessarily imply that an estate needed to have\textit{ conductores} in order to have\textit{ coloni}, as only\textit{ coloni} are possible as well) and the main difference between\textit{ coloni} and\textit{ conductores}, according to Aubert, is that the “tenant [(\textit{colonus})] could either sublet the land or cultivate it himself, alone or with the help of a rural household...Another option, available to landowners and to chief-lessees (\textit{conductors}), was to establish a bailiff (\textit{vilicus}) in charge of an estate.”\textsuperscript{420} The\textit{ vilicus} was a special business manager.
(institor) for agricultural management purposes, and in general the conditions explained in the manager/agent section applied to the vilicus as well, and as such a full exploration is not required. Therefore, it is only important to understand that “in many cases agency existed side-by-side with tenancy and independent smallholdings, and that the various systems of management supplemented each other.”

Therefore, as a general conclusion for this paragraph, it should be clear that tenants could lease out any size of land from the owner, and could then even sub-lease it to others and/or hire any labour they wished. The ‘land’ itself could naturally also include equipment of any type (even slaves), or it could be empty. All aspects simply depended on the conditions set within the tenancy contract and essentially a whole range of things were possible. This is important to remember, especially since it appears that various scholars only view this issue in extremes (on one hand the small owner/tenant, and on the other, the large owner/conductor).

Even though it might seem that the question of subsistence has been assuaged sufficiently, there are scholars who claim that the tenants were subsistence farmers; however, as Foxhall clearly stipulates, referencing the small tenants: “Not all tenanted plots are farmed for subsistence” and “not all tenants were subsistence farmers.” Furthermore, Erdkamp writes that some “flexibility in the access to land was provided by tenancy…we do not know how much land was cultivated by small-scale tenants, but it may be assumed that most peasants lacked the capital to rent land in addition to the land they owned. Such tenants may have been small farmers rather than poor peasants.”

Much as was explained in the section for the peasant owners, while it is certainly possible that some lived on a level of subsistence, it does not automatically imply a ‘subsistence farmer’ who has no interest in profit. Furthermore, all those tenants (much like owners) who were actually of the larger kind (middle and larger) could not have been subsistence farmers, and as already explained, not all tenants were small. In essence, Foxhall writes that both “production for subsistence and production for exchange must have been vital for farmers at all levels, though of course configurations of production strategies varied with the wealth, scale and type of particular enterprise.” Additionally, “even very exploitative leases may have been a ‘least worst’ alternative for tenants or sharecroppers. If tenants benefited from the arrangement it was primarily because it allowed them access to power networks and agricultural inputs, and decreased risk in the event of crop failures or the
disruption of farming for some other reason." As a general conclusion therefore, it has to be clear that although some Roman tenants could live on a level of subsistence, it could not have been a subsistence economy, because the moment there is access to a market - which the tenants did have - and there is an opportunity to attain ‘external’ income, a subsistence economy is no longer in question. Much as for the free peasant owners, there was nothing hindering tenants from employing their labour elsewhere in times of need or want.

A last aspect of tenancy which shall be explored is the interest that emperors may have had in aiding tenants, at least on the imperial domains (possibly elsewhere as well). The primary evidence of this comes from North Africa, where the emperor became by far the largest landowner by the mid-end of the first century A.D. In general, according to Heitland, “as time went on the tendency of emperors, or at least of their fiscal departments, was to encourage the increase of small farm tenancies on the African domains, is not to be denied.” In particular, two laws were enacted called the *lex Manciana* and the *lex Hadriana*, which clearly portray the acknowledgment of some of the difficulties that small scale tenants (*coloni*) faced, and the attempts made to aid them.

It is not exactly clear when the *lex Manciana* was enacted, but evidence seems to show that its origin most probably lies in Flavian times, and it is also not entirely certain to what extent it applied to imperial domains (most probably not all imperial domains) and to public land (*ager publicus*). What is known, is that the *lex Manciana* gave the *coloni* certain rights to farm and eventually own land which had initially not been assigned (*subsiciva*), most probably due to an initial perceived lack of agricultural potential (during the colonisation phase in the Republic), however, most probably due to ensuing improved technology and irrigation systems, this land became potentially viable. This land could actually be on public land or on an imperial domain - it did not matter as the law applied to both. According to De Martino, the agricultural crops and products that were farmed and/or created on these lands belonged to the *coloni* farming them; however, respective to the crop or product in question, a share in kind had to be given to the tenant (*conductor*?), or *vilici* of the land. This share was called *pars colonica*, and is probably related to the idea of sharecropping, even though no specific contract for sharecropping was made (the *lex*...
automatically implied it); i.e. the ‘owner’ of the land still was liable to get something, however, there was no ‘rental fee’. Some examples of the share are: one-third of wheat ‘from the barn’, one fourth of barley, one sextarius (approx. 500ml) of honey from each honeycomb, etc. The entire list of products is extensive, and the various regulations as well, to list these would fall outside the scope of this paper as it would have to include all possible kinds of agricultural products (animals as well). Another stipulation of the lex Manciana was that for a certain amount of years after ‘planting’ – once more depending on the product (e.g. 5 years for wine, 10 for oil, etc.) – the colon was not required to pay any share. Furthermore, the individuals who had planted the new products were given certain rights of usus proprius, which means they could leave the land as an inheritance for their son, and they could also pledge the land. In order not to forfeit any of their rights the peasants were expected to spend six days of the year working unpaid for the actual owner (or tenant) of the land, of which two days were meant for ploughing, two for weeding, and two for harvesting.433

As the name implies, the lex Hadriana was enacted during the reign of Emperor Hadrian, and it was basically an ‘upgrade’ of the lex Manciana, which meant that in the most general sense it was very similar to the lex Manciana because it also gave the coloni the right to cultivate and inherit land, and the liberty to withhold shares of the harvest for a certain amount of years.434 The upgrades dealt with the fact that it now not only allowed for the cultivation of non-assigned land (subsiciva) but also any land which had once been cultivated and then left uncultivated (centuriae elocatae). Furthermore, the share of produce that had to be given only applied to the crops which were actually going to be sold and not the crops grown for local sustenance purposes.435

It is clear from both laws, especially from the ‘upgraded’ lex Hadriana, that this was clearly an attempt to help small tenants, firstly by giving them options to cultivate and eventually get ownership of land, secondly by protecting them the first couple of years until the land was capable of producing the agricultural good in question, and thirdly only taking the share of the produce meant for the market. This clearly shows an understanding for the needs of peasants, and in fact the measures seem to have had some success; for example, according to De Martino the fundus Neronianus (an
estate) experienced an increase in population number and most probably agricultural yield as well, while the *saltus Neronianus* (another type of estate) experienced an ‘unknown’ type of improvement due to the ‘usage’ of the laws on these estates. However, this is not to claim that the laws worked well everywhere, as obviously they seem to be most functional in areas where there was a ‘lack’ of labour and uncultivated land available. This is most probably why the laws are mentioned in a selective amount of areas, as areas with sufficient labour and full cultivation would not necessarily require the enactment of such laws. Besides various imperial domains in Africa, according to De Martino, similar remedies have also been attested for in Asia Minor (in/around Prusa), and at the very end of the 2nd century in Italy under Emperor Pertinax. As a side-note, the need to do so in Italy should be kept in mind, as the decline of Italy will be explored in greater detail in subsequent sections. Irrespective of where the remedies could be found there is one aspect which makes them very intriguing from the point of view of an overall agricultural production standard: the fact that the region where the laws appear most predominantly – North Africa – became the absolute main exporter of agricultural products to the city of Rome by the 3rd century A.D. In fact, according to Randsborg, during the period 50-100 A.D. around 11% of agricultural products entering into the city of Rome came from North Africa, which then subsequently increased in 100-150 A.D. to 19%, in 150-200 A.D. to 29% and finally in 200-250 A.D. to 55%. In contrast, if the history of the two laws is examined, commencing from the *lex Manciana* in the mid/end of the first century A.D., to the *lex Hadriana* in the beginning/mid-second century A.D., and the acknowledged fact that both laws remained intact into Severan times until the mid-third century A.D, it becomes clear that there could have been some connection. As can be inferred from subsequent dates of the percentage increase of agricultural export to Rome, it appears as though it tended to comply with the enactment of the laws in North Africa as ‘jumps’ of 10% occurred in the periods following the enactment of the laws. The ‘only’ aberration seems to be the final jump of some 26%, but this can be attributed to a powerful plague (which shall be explained in greater detail later) which hit the Roman Empire in mid/end of the 2nd century A.D. and the subsequent barbarian attacks; both circumstances which did not affect North Africa much (or at all). There is naturally little evidence that the jumps in export are actually caused by increased productivity due to the two remedies, but considering the timing of the jumps it could be more than coincidence. This is not to
say that the two remedies would be the only reason, but most probably one of the reasons. This is also not to claim that life for *coloni* or peasants in North Africa was wonderful on account of the laws, as for example, problems between them and the manager/owner/main tenant still occurred, as attested for by occupants of land on the *saltus Burunitanus* during Commodus’s reign who appealed directly to the emperor since they had been forced to deliver higher dues and work for more days than stipulated by the laws. The main aspect, however, to keep in mind is that irrespective of difficulties that still existed, the laws were a definite improvement over the past, and gave opportunities to the landless poor. If similar opportunities existed during most of the 18th/19th centuries early modern Europe is highly debatable.

**Labourers**

Unlike owners and tenants that were ‘constantly’ on the land, a third option for agricultural labour were the labourers who could come in at seasonal times when additional work was required, as for example mentioned by Temin: “The demand for unskilled and semi-skilled labor for particular kinds of work varied widely over time both in the country and in the city. Agricultural demand varied seasonally, and the peak rural labor demand was satisfied by temporary employment of free workers in the late Republic and undoubtedly at other times as well.” Beyond seasonal needs, such as the harvesting period, there were also initial ‘start-up’ requirements when planting new plantations, for example mentioned by Scheidel, where “the most detailed account of Roman arboriculture envisages not merely the use of slaves in skill-intensive long-term activities but even the employment of *external* workers for the purpose of digging up vineyards.” That additional help is required during peak agricultural periods or start-up periods should come as no surprise because even today it is very common to employ additional external labour during such moments. Furthermore, it was actually also possible to hire labour for extended periods of time, but this seems to have been done very rarely, as it was more common to either purchase a slave or have the free labourer become a tenant.

The labourers worked under the law of *locatio conductio operarum*, which has been described in detail in the ‘Wage Work’ section, meaning that they received money for their services and were paid per day of work, thereby heavily implying a monetary economy. The labourers, naturally, could either be free or slaves. As already
explained in the ‘Peasant Owner’ section and the ‘Tenant’ section, both types could also work as labourers on third estates, and when doing so would also function under the law of *locatio conductio operarum*. The main question would perhaps be why estates, especially the largest and richest estates, would require external labourers considering the fact that usually such estates had more than sufficient capital to employ more permanent labourers. The answer, much like in modernity, deals with profit, and already as early as the 2nd century B.C. Roman agronomists like Cato were aware that it was more profitable to employ external labour only during peak agricultural times like harvests, than it was to hire it for an entire year and have labourers sit around idly during low periods.\textsuperscript{443} This desire and capability of making a profit cannot exist within a subsistence economy, and that is why any estate that is capable of hiring external labour for peak periods and paying it through monetary means is almost by default not part of a subsistence economy. As for the labourers themselves, they most often came from the vicinity of the estate in question, either from nearby towns, or from nearby farms,\textsuperscript{444} as for example “the Umbrian labourers who cross the Po every summer to help the Sabines with their harvest”.\textsuperscript{445} In fact, for that reason, according to De Martino some of the largest estates which had no neighbours in the vicinity (due to the vast distances) apparently encountered slight problems in obtaining seasonal labourers,\textsuperscript{446} but there is no mention of them not being ultimately able to do so (most probably it required slightly more effort, time and possibly higher wages to induce labourers to travel the long distance).

**Contractors**

Contractors are the last main category of agricultural workers, and in essence these were agents/managers. Similar to agents/managers they were given a *praepositio* to conduct a specific type of agricultural process of any kind. The previously mentioned *conductores* or the *vilici* can be placed in this category. Much as the section on ‘Managers’ has explained, these individuals could manage entire aspects or only partial aspects of an agricultural production, and as such, a detailed examination is not required. The only interesting addition to be made is the *redemptores*, who unlike *conductores* or *vilici*, tended to be employed in the short term. According to De Martino, *redemptores*, unlike other forms of agents/managers, tended to be mainly hired for the purpose of the harvest. In essence, these individuals were hired to collect the harvest and to sell it themselves, thereby alleviating the problems of harvesting
and transporting the goods to the market for the owner.\textsuperscript{447} An example of such a harvesting contract between a \emph{redemptor} and owner is the following: the \emph{redemptor} was obliged to take care of all the necessary work (including hiring the workers), and if incapable of doing so, the owner could do so using his own funds, but then the \emph{redemptor} would have to repay the expenses incurred by the owner from the eventual sale. In that regard, an oil harvesting contract for the estate of Lucius Manlius, stipulated that the \emph{redemptor} held the obligation to employ 50 workers, of which 2/3 should be \emph{strictores} (olive pickers) and 1/3 \emph{leguli} (olive gatherers), and furthermore, the \emph{redemptor} had to pay their wages and keep, while the estate owner gave 5 \textit{sesterces}, salted olives, oil and vinegar. In a similar fashion, the \emph{redemptor} had to also hire workers for the oil production (\emph{factores}).\textsuperscript{448} As can be inferred from the contract, the main use of a \emph{redemptor} is when the owner/tenant of the land either does not want to, or cannot take care of harvesting and selling the products on the market (for whatever reasons). In that case the \emph{redemptor} can be hired to come and take care of the whole or only part of the process, and depending on actually how much the owner wants to be involved, the contract can be created accordingly. As a side note, the contract also depicts the division of labour inherent in Roman society, as the \emph{redemptor} did not hire some random individuals for a job as ‘simple’ as picking and gathering, but had to hire labourers who were specialised in some way for the task at hand. The important part to remember is that Roman society had a variety of possibilities of conducting almost any function, even something as straightforward as agriculture, and that a large stratification of jobs existed for almost every eventuality. This could not have existed in a subsistence economy.

\section*{Roman Agricultural Production}

The previous section on Roman agricultural labour clearly shows not only the complexity, but also the vastness of possibilities that existed within the Roman agricultural system. Furthermore, the point is often made that a market existed and that agricultural products, especially those produced on mid-large estates and also on a sufficient number of small-scale farms, were aimed for purchase and sale on this market and were not intended solely for subsistence purposes. This section will finally explore agricultural production, commencing from Roman agronomical theories to the actual yields attainable during Roman times. As will become evident,
the Roman system is once more easily comparable to 18th/19th century developed nations, and not to a subsistence or a closed household economy.

Agricultural Economic Thought

During Roman times various authors published books on the topic of agriculture, and the most famous of these books discussed in great detail and with a certain degree of sophistication, how the ideal farm should be run. These books do not only give an insight on the ideal Roman farm, but also on the conditions of rural areas and agriculture during the time they were written. As such, they are important pieces in the puzzle for discovering the Roman mentality of farming and how agriculture developed over the years. The most famous authors were: Cato (234 – 149 B.C.), Varro (116 – 27 B.C.), and Columella (4 – 70 A.D.). Even though a full examination of their works falls outside the scope of this paper, a cursory glance of these works is sufficient to understand just how incredibly technical the Roman approach to agriculture was: the involved level of detail is exemplary. For example, regarding ‘merely’ the pruning of a vine, Columella writes: “Ablaqueation is then followed by pruning, in such a manner that the vine is reduced to one small rod, according to the directions of ancient authorities, leaving two eyes close to the ground. This pruning should not be done next to the joint, lest the eye be checked in its growth; but an oblique cut is made with the knife about midway between the joints, lest, if it be crosswise, the scar may hold the rain that falls upon it. But the slope is made, not toward the side where the bud is, but to the opposite side, so that it may shed its tears upon the ground rather than upon the bud. For the sap that flows down from it blinds the eye and does not allow it to grow.” Essentially all of Columella’s work is this technical, and it focuses not only on the actual agricultural product, but also on how to ideally farm, harvest, and even acquire labour: all of which characterizes an estate that is meant purely for optimizing all capital in the pursuit of maximum profit. The estates mentioned in these books were not meant for subsistence purposes, but for a market economy. However, as mentioned, it falls outside the scope of this paper to examine all of the works in detail, and as such a brief summary will be enacted by using knowledgeable scholars who have actually examined the works. As a side note, even though Cato lived some 150 years before the Principate, his work is still of importance as the proponents of subsistence economies often use his work to attempt to prove their theories without understanding that subsequent authors have built upon
his work and that times change. To some extent the same can be said of Varro; however, he lived at the very end of the Republic which makes his work more applicable.

**Agricultural Market-oriented Ideas**

**Cato**

Cato’s work has often been cited by scholars who attempt to prove a Roman subsistence economy, or to disprove a capitalistic market system. The fact that Cato wrote his work called “De Agricultura” during a period just after the 2nd Punic War (218-201 B.C.) - in fact barely three decades after the war, in the very initial phase of a three century long Roman growth period - should make these scholars careful when using this work as the main point of reference with regard to the Principate. As ten Brink very convincingly proves in her book “Die Begründung der Marktwirtschaft in der Römischen Republik”, the period that Cato lived in was actually the very beginning of Roman capitalism and the market economy, and as such it would not be surprising to come across some aspects that do not apply to a capitalistic market economy. Irrespective of this, Cato has actually been misinterpreted in many cases, or rather the ‘demands’ placed upon him have been far too modern. For example, two of Finley’s misgivings regarding Cato are the following:

- “Lacking the techniques by which to calculate, and then to choose among, the various options, for example the relative economic merits of growing or buying the barley for slaves and the stakes for vines; lacking the techniques by which to calculate the relative profitability, under given conditions, of one crop and another, or of agriculture and pasturage; relishing independence from the market as buyers, from reliance on others for their own necessities, the landowners of antiquity operated by tradition, habit and rule-of-thumb, and one such rule was that ‘a *paterfamilias* should be a seller, not a buyer’.”

- “There is a famous example of the approach in Cato’s manual (I.7) when he enumerates, in descending order of importance, the products of an ideal 100-iugurum farm: wine, garden fruit and vegetables, willows, olives, pasture, grain, forest foliage for fodder, and acorns. The passage is famous for the wrong reason: it is regularly cites as a general statement of the realities of Italian agriculture in the second century B.C., whereas it ought to be quoted as proof of
the absurdity of what passes for economic analysis in the ancient sources. I need hardly enumerate the weaknesses: no consideration of the location of the farm with respect to available markets or to export possibilities; nothing about the nature of the soil beyond the single phrase, ‘if the wine is good and the yield is great’; no cost accounting of even a rudimentary nature.”

The problem with the quotes is Finley’s ‘demand’ for Cato to assign profitability figures for the various products, and that Cato is ‘only’ basing his information on tradition. Firstly, demanding profitability figures in a period when the Roman market economy was in the process of forming itself is possibly rather too much to ask from an agronomist who incidentally, is not an economist; and secondly, even though Finley claims that Cato’s *paterfamilias* operated by tradition, according to Lowry and Gordon, Cato actually implied that “there should be an approach to cultivation which firmly breaks with the tradition of self-sufficiency and polyculture, giving priority to saleable products”. Furthermore, the sentence that a ‘*paterfamilias* should be a seller, not a buyer’ has been misinterpreted too often, as it implies some form of a partially closed economic system. In contrast to this, according to ten Brink, the main goal of an ideal ‘Cato’ estate is to produce for the market and to achieve maximum profit by keeping production costs as low as possible. Cato not only makes a list of the most profitable agricultural products possible on 100 *iugera* (26 h.a.), but also which type of land is most ideally suited for which product. He also mentions the ideal number of labourers that a farm should have and how these labourers should be placed/managed. Even though he mainly discusses slave labour, which is not surprising considering that the period during which he wrote his work was at the height of slavery (as proven earlier), he does still mention that external labourers should be brought in during harvests. Finally, even though Cato does mention that the landlord should be as self-sufficient as possible, he suggests that certain products (e.g. equipment) should be purchased from the market, even from far away. To accentuate ten Brink’s interpretation of Cato’s work, De Martino comes to very similar conclusions. Much like ten Brink, De Martino, mentions that Cato’s aim in agriculture is the production for a market, and that the owner is no longer simply a ‘worker’ on his own field, but the *paterfamilias* who invests his capital into the land in order to make the largest profit. The ideal method was for the owner to leave the management and running of the estate in the hands of a *vilicus*, who was a slave in
most cases. This is not to say that the owner should never oversee any activities, on the contrary, Cato thinks it is important that he keeps a close eye on the manager, the estate, the work being done, etc.\textsuperscript{455} Everything should be focused on the goal of achieving a profit: the choice of land, the price, its position in respect to easily accessible transportation systems like roads and waterways in order to transport the produce, the equipment of the estate and the tools, the proximity of possible additional manpower, etc. Since the owner is trying to make as much profit as possible, he should be a seller not a buyer. However, the larger part of the equipment and tools were to be purchased in areas which specialized in the production of these, since they were usually cheaper and of a good enough quality.\textsuperscript{456}

As can be inferred from the findings of ten Brink and De Martino, Finley is shown not to be entirely correct, especially with regard to the landowner not being a purchaser and the supposed lack of consideration for placement of the farm relative to a market or export possibilities. According to De Martino, the ancient authors were aware that estates which were not well connected would result in less profit, and this is why they focus their literature on estates located near to cities or markets, where the landowners could quickly sell their produce in order to make a good profit.\textsuperscript{457} Furthermore, the undertaking that Cato discusses is actually a further development from the older forms (Finley’s tradition), because it was organised according to production type and production unit. The personnel tended to specialize in one type of work thereby causing an improvement of production as a result of greater efficiency. Additionally, the fact that the landowner had more capital in order to invest into wine or olive oil production, allowed the owners to achieve better results than any small peasant was capable of.\textsuperscript{458} As to the actual profitability, and the lack of ‘numbers’, as per Finley’s complaint, De Martino actually attempts to calculate the profit for olive oil and wine production, discovering that the owner could expect a 2-3\% yearly income for olive oil while it was 10.7\% for wine. These values include deductions for all sorts of costs: slaves, wages, equipment, maintenance, amortisation for capital at 4-6\% interest rate, etc. Irrespective of the fact that the values are only an ‘exercise’ and cannot be taken at face value since Cato never calculates them, De Martino actually manages to calculate them by reading Cato’s remarks thoroughly and using figures other authors mention, especially Columella.\textsuperscript{459} Irrespective of this, De Martino clearly shows why wine was considered the number one option in terms of
profitability and olive oil only the fourth, and furthermore, it also shows why a rationally organised agricultural production could have been more profitable than money-lending since the amortisation was included in the calculations. As a side note it should be noted that while Cato gives no figures, De Martino is able to make the necessary calculations using figures given by Columella, who not only gives basic figures – as will be shown - but also attempts to calculate the profitability of products during his time, the very aspect that Finley finds is lacking in Cato’s work.

**Varro**

As mentioned earlier, Cato’s theories are only a starting point and subsequent authors have improved upon his ideas, especially because Roman capitalism and the market economy were developing. To that extent, the ideas of Varro are more complex than Cato’s and they also contain elements Cato does not mention.

In the first instance, according to ten Brink, Varro explicitly starts discussing the importance of proximity to markets and the importance of ease of transportation/distribution for the estate. Furthermore, Cato’s general ‘self-sufficient’ goal for an estate (though as proven, not entirely a complete self-sufficiency) is not shared by Varro, who largely believes in the market, but he does admit that the largest of estates could possibly be more self-sufficient than middle-sized estates. However, irrespective of this, self-sufficiency is seen by Varro as a non-optimal usage of the land. To that extent, De Martino mentions that Varro not only allows the sale and purchase of goods at a market, but also between neighbouring estates. Varro also expands on the list of agricultural products Cato mentions, adding livestock breeding and specialised agricultural ‘luxury’ products, such as various types of poultry, sea or freshwater fish, rabbits and other ‘wild’ animals, etc. The fact that Varro is able to expand the base list of profitable agricultural products, and that some of this expanding list corresponds to ‘luxury’ agricultural products clearly shows not only an expanding market for agricultural goods, but also an increase in the standards of living of the consumers. If the market would not have been expanding and the standards increasing, it would be hard to understand how a whole variety of ‘new’ products could become profitable, especially estates producing ‘only’ luxury agricultural products. Furthermore, according to De Martino, various other sources also attest a greater variety of products coming into existence in large numbers,
it is not clear how scholars can believe in a subsistence economy in the face of the fact that not only the total number of agricultural products was increasing, but the variety as well, and furthermore, that the production of all of these products was still profitable. Another main addition with respect to Cato is that Varro discusses aspects which we now understand to be competitive advantages, i.e. he mentions that certain regions, for a variety of reasons, were ideal for specific products, and that estates in these regions should specialise on the product in question (in fact, he names some of the regions and equivalent products).\textsuperscript{466} As to the profitability of products, much like Cato, Varro does not use modern profitability figures, but he sometimes brings forth specific examples where profit was made. For example, he mentions that a neighbour of his was capable of making a profit of 150 \textit{sesterces} per \textit{iugerum} on pastureland, and even though no mention is made of how this was calculated, it is still a clear indication that profit was understood in monetary terms and that the Romans were even capable of calculating profit for specific aspects such as per \textit{iugerum}.\textsuperscript{467} To that extent, Varro mentions that olive oil, wine, fruits and livestock were the most profitable (seemingly in no particular order). It is, however, important to note that Varro also distinguishes between the various types of a specific product, mentioning for example, a large variety of wines and that some are naturally more profitable than others. Furthermore, he also enumerates the multiples uses and profits attainable from a variety of livestock, i.e. meat, diary products, leather/wool, work-power, etc.\textsuperscript{468}

As can be inferred from Varro’s work, in contrast to Cato’s, there is clear evidence of an increasing market orientation of the estates, and that the market was becoming larger and more diversified. This fact, once again, is a strong indication that capitalism and the free market had become stronger, and not vice versa. The best, however, was yet to come. Varro was writing during the end of the Republic, and he died just as the Principate was about to come into existence; the next author, Columella, advances his precedent’s work even further regarding the sophistication of agriculture. However, before an exploration of Columella is commenced, a fourth agronomist should be mentioned by the name of Tremellius Scrofa who was a contemporary of Varro.

No books of Scrofa’s remain, but since the author was often quoted by both Varro and then later Columella, he must have also been influential in the field of agronomy.
Even though Scrofa also covered various aspects, a main point should be highlighted for the purpose of this section. This is Scrofa’s belief that during the time he was writing, the landowners were generally producing more from a quantitative and qualitative aspect in contrast to previous times, especially with reference to grain and wine.\textsuperscript{469} Once again, this implies an improvement in agricultural production on account of increasing capitalisation, market strength, and improved agricultural sophistication. Furthermore, as the previous section has shown, if the same land which in the ‘old days’ produced only for subsistence purposes, now produces larger and higher qualitative amounts, how can this still be called subsistence? The answer is that it cannot. By the end of the Republic Italy was completely focused on the production of agricultural market goods, and it was brimming with olive and wine producing estates, and there was also a large livestock production (at least in comparison to earlier times). Furthermore, the production of fine luxury articles also came into existence.\textsuperscript{470}

**Columella**

As already implied in earlier sections, and in the words of Lowry and Gordon with respect to agriculture: “with Columella we reach a fairly advanced stage of the discipline: he discusses investments in agriculture, and he rates agriculture a science meriting serious study and constant investigation”.\textsuperscript{471} That Lowry and Gordon are not far off with their assessment is even clear from a cursory glance at Columella’s work titled “De Re Rustica” where the level of technicality is extremely high, and where Columella often enters into the most minute details. The work, considering the technology of the time, can truly be considered ‘scientific’, as the amount of specific information can only have been achieved with extended testing and gathering of information (at least from the viewpoint of a layman). According to De Martino, Columella’s main focus is on spreading a form of intensive agricultural production which has high investment costs and requires high technical perfection. Such an estate would require an improvement of the usage of the workforce and an experienced and carefully selected steward who implicitly understands agriculture.\textsuperscript{472} Furthermore, Columella seems to be against extensive pastureland, as he does not consider this aspect to be an optimum usage of land; he writes about needing to have a rational usage of capital and labour and a need for an intensification of agriculture.\textsuperscript{473} Yet another of Columella’s ideas, of great importance to agriculture, is his
understanding of the exhaustion of land - already mentioned under Scrofa - but unlike Scrofa, Columella does not believe in letting land lie fallow, but in a timely and moderate fertilisation, which he naturally explains in detail.  To that extent, his ideas are a ‘natural’ continuation of the ideas of Cato and Varro, but unlike the first two, Columella actually seems to accept profit motivation, the existence of a market, etc. as a given (at least no scholars seem to mention that he is stressing any of these aspects).

Finley, for example, has some difficulty understanding why any scholar would laud the fact that a Roman author would discuss certain ‘common-sense’ aspects: “The Roman agricultural manuals (and no doubt their lost Greek forerunners) do occasionally consider marketing and soil conditions and the like, but they too never rise above rudimentary common-sense observations…Varro’s advice (De re rustica 1.16.3) to cultivate roses and violets on a farm near a city but not if the estate is too far from an urban market, is a fair sample of common sense.” Firstly, Finley, once again, is examining the subject from an immoderately modernistic viewpoint, as aspects which may seem logical to us today may not have been as logical in antiquity. Secondly, the fact that Varro is pointing it out does tell us that access to a market was important, and finally, and most importantly, it would seem that Columella, much like Finley, also deems such an aspect to be common-sense (as nothing to the contrary is given, and a cursory glance of his work seems to acknowledge it). The fact that during Columella’s time the market, and all the other aspects of a capitalistic market system were deemed common enough that they did not merit extensive mention, should be more than enough evidence to prove that by the time of the Principate theorising on the existence of a market would be a superfluous task, as it is clear that it did exist. Additionally, Finley seems to forget that these books were handbooks for agronomists, and not for economists. The main purpose of these books is to focus on agricultural production and not so much on market forces. Furthermore, if such aspects are truly so rudimentary, than why do thousands of economics and finance textbooks in modernity often discuss the same aspects, and for that matter in great detail. According to Finley, this is not needed. To that extent, even though Finley complains about Cato and Varro he does not complain about Columella - at least not regarding this aspect, which once again heavily suggests that during the Principate the process of market creation and capitalism had reached fruition.
More of Columella’s ideas dealt with an increase of the types of livestock,\textsuperscript{476} and the need for a landlord to be more present. In essence, Columella does not approve of the notion of an absentee landlord, not so much with the fact that a landlord must work in the fields, but that landlords should attend to their investments more. Furthermore, Columella also speaks out against letting the land go to waste, as it seems that some estates had become so large and vast, and therefore large parts were left fallow as a result of neglect. Columella was simply against purchasing land which was not going to be used intensively.\textsuperscript{477} This aspect of owned, yet unused lands most probably became a slight problem not only in Italy, but also in other regions of the Roman Empire, as the earlier section on the \textit{lex Manciana} and \textit{lex Hadriana} attests, and Columella warns against such problems. As earlier sections mention, Italy would run into various ‘problems’ in the 1\textsuperscript{st}/2\textsuperscript{nd} century A.D. and Columella’s work already attests for some of the growing problems. To that extent, De Martino mentions that during the first century AD there were structural deficiencies in Italian agriculture, and they became progressively worse. Italy had namely lost its dominance over the provinces: they had begun exporting their produce to Rome and had therefore increased their economic strength significantly. For example, there is no question about the fact that Gaul and Spanish wine competed successfully with Italian wine, a process that had begun under Augustus. This is not to claim that Italian products were completely removed from the market, only that the provinces had caught up and in some cases seemed to surpass Italy.\textsuperscript{478} The examination of this falls outside the scope of this paper, but it should be clear that Columella appears to be aware that Italy was losing ground in the provinces.

A final aspect of interest in Columella’s work is his attempt to calculate the profitability of a vineyard, an act which should have allayed any doubts in the minds of those denying a capitalistic system, but instead even this seems to be perceived as insufficient. For example, Finley writes:

“If we now look at the text that is regularly cited by modern historians as the most reliable ancient analysis of Italian farm income, the model \textit{7-iugerum} (4.5-acre) vineyard described by Pliny’s near contemporary Columella (3.3.8-10), we discover that though he allows for the purchase price of the land, of the slave vine-dresser, the vines and props, as well as for the loss of two years’ income while the new vines are
maturing, he forgets the farm buildings, equipment, ancillary land (for cereal grains, for example), the maintenance costs of his slaves, depreciation and amortization. His implied 34% annual return is nonsense, even after allowing for his polemical intention in this section, and we must conclude that this was a merely perfunctory desk exercise, that the large land-owners worked from crude empirical knowledge alone, heavily backed by the social-psychological pressures of land ownership in itself.”

Finley’s examination once again needs to be checked for its realism, and it is clear, as is often the case, that his viewpoint is far too modernistic. In the first instance it has to be clear that Finley initially complains that Cato did not produce any profitability figures, and now that a Roman agronomist actually does, he complains that the figures are not entirely correct - that Columella has made calculation mistakes. At least Finley makes an allowance for this exercise to have been a perfunctory desk exercise, which it most assuredly must have been, but the criticism is still misplaced. For example, it is clear from Columella’s work that he intends this just to be an exercise for ‘the planting of vines’ and not for the purchase of an estate with the intention to plant vines. The difference is that Columella assumes that the farm and its workforce already exists, which makes it clear why he does not include costs for farm buildings and the maintenance of slaves (who have to be maintained irrespective of whether they work in the vineyard or not).

This is not to imply that Columella is necessarily correct with his calculations, only that his calculations should not be examined under a microscope. For example, Lowry and Gordon write that Columella “has handed down to us a celebrated assessment of the profitability of a vineyard; even if modern authors contrive to draw a wide range of conflicting conclusions from the statistics Columella produces, his assessment more than suffices to demonstrate his entrepreneurial mentality.” Furthermore, once again, Columella is writing an agricultural handbook: he is not writing up financial statements of a vineyard. There is, as such, no need to write up precise and detailed calculations; however, as a side-note, Duncan-Jones tries to correct Columella’s mistakes and comes to the result of 6% per year (less profit than Cato’s vineyards). Another aspect of confusion is Finley’s belief that ‘the large land-owners worked from crude empirical knowledge alone’, which seems to suggest that the landowners were not aware if they were achieving a profit or not. This is a very powerful statement, and how it is possible for Finley to make such a claim is not clear. If the Romans were not aware how to
calculate profit it is highly doubtful that their economic system would have functioned so successfully for such a long time. The examination of this will become evident in the ‘Roman Accounting’ section, but it has to be clear that Finley must be wrong, for it is not possible that the economic growth attested for could have occurred if the Romans had no knowledge of calculating income, expenditure, profit, etc.

As a general conclusion relating to all three of the Roman scholars, it should be evident that there was a clear progression which distinctly portrays the emergence of capitalism and a market economy. To deny any such occurrence by focusing on very specific issues in the works is faulty logic. For example, as much as Finley might disagree with Columella’s incorrect calculations, there is no word from Finley about the remainder of Columella’s work. The act of being able to use one faulty calculation from an agricultural handbook of approximately 17,000 words which belongs to a set of twelve books, and to disprove capitalism while not mentioning anything about the remainder of the book(s), is not clear. As already mentioned, a cursory glance at the entire work is sufficient to understand that the ideas and suggestions in these works are simply not intended for a subsistence farm existing in a subsistence economy. The ultimate application of these books, especially Columella’s, is only possible in a capitalistic market economy. Therefore, as a concluding remark, Green mentions: “Whether or not Cato’s or Columella’s manuals on farming practices make sense to a modern accountant, their very existence (along with others now lost) underlines the size of the audience for advice on profitable agriculture.”  

**Roman Agricultural Yield**

The preceding sections on agriculture make reference to the fact that during the Principate, even with the apparent decline of Italy, agriculture reached high levels of sophistication comparable with the 17th-19th centuries, and furthermore, that agriculture existed within the context of a capitalistic market economy. In essence, the aim of Roman agriculture (including even small-scale farms) was to produce cash crops, crops that were intended for sale at the market and not for self-sufficient subsistence purposes. Even the ‘most’ basic and smallest farms had to produce cash crops, for otherwise how would they have paid taxes, taxes which were clearly paid through monetary means, at least until the 3rd century A.D. This does not,
however, signify that absolutely all forms of taxes and dues were paid through monetary means: there were still one or two that were paid in kind, but these were usually very specific, as for example, a tax on wheat in Egypt and North Africa. The point to remember, however, is that by far the most predominant amount of taxation was paid via monetary means, and as already proven in the money section, the Roman economy ran on a monetary basis so it was definitely required for even the ‘smallest’ peasant to have money in order to pay taxes. Therefore, even those who wished for ‘self-sufficiency’ had to still produce some cash crops in order to pay their taxes, and it was most probably this fact in combination with the existence of a capitalistic market economy and the general desire for profit, that caused a push-pull effect on Roman agriculture which increased the levels of agricultural yields because farmers were either interested in making a profit, or they were forced to produce beyond what the land yielded purely for sustenance purposes (or they had to find additional employment elsewhere). This section will prove that the yields were comparable to those in the 17th-19th centuries.

**Investments in Agriculture**

Before the actual yields are examined, one aspect has to be clarified once more: the investment in land. Irrespective of all the evidence cited about investment into land and agriculture, primitivists find it hard to attribute this to any sort of economic rationality. For example, Finley, in reference to Pliny the Younger deciding on whether to purchase an adjoining estate, writes that “Pliny neither calculated nor claimed that the second Umbrian estate would produce a higher return than the loans he would have to call in to meet the purchase price. He spoke only of the gain in amenity. Investment in land, in short, was never in antiquity a matter of systematic, calculated policy, of what Weber called economic rationality.” In more detail, Finley writes:

“An estate adjoining one of his in Umbria was up for sale at a bargain price, thanks to mismanagement by the owner and his tenants. Pliny was thinking of buying it. The primary advantage, he writes, could be one of amenity (*pulchritudo*). There are also practical advantages: the two properties could be visited in one journey, both could be put under a single procurator (agent) and perhaps even under one *actor* (bailiff), only one country-house would have to be kept up to the standard appropriate for an occasional sojourn by a senator. On the debit side, he adds, are the risks in putting
two holdings under the same ‘hazards of fortune’ (*incerta fortunae*), the weather for example. What is your advice? was the question Pliny put to his correspondent, even though he gave none of the information one might expect, neither the dimensions of the property nor the current rental nor the details about the produce. The anticipated advantages were largely psychological; apart from the bailiffs, there is not a whisper of possible economies of scale that could or would follow the consolidation of two adjoining estates, let alone any consideration of reorganizing the production, for example towards either greater diversity or greater specialization, or of a more efficient use of the labour force.”

Even though Finley’s analysis of Pliny appears to be very clear and straightforward, in truth it is one of the most confusing aspects of his entire work on “The Ancient Economy”. What makes it so confusing is Finley’s insistence that Pliny is only interested in amenity and psychological benefits, even though the letter itself also mentions other aspects, aspects which Finley misses in his actual citation but which are evident in the letter. For example, Finley wonders why Pliny mentions nothing about dimensions, rental, or details of the produce when Pliny actually does:

“And now, to come to the chief consideration:—the lands are rich, fertile, and well-watered, consisting chiefly of meadow-ground, vineyard, and wood, while the supply of building timber and its returns, though modest, still, keep at the same rate. But the soil, fertile as it is, has been much impoverished by not having been looked after. The person last in possession used frequently to seize and sell the stock, by which means, although he lessened his tenants’ arrears for the time being, yet left them nothing to go on with and the arrears ran up again in consequence. I shall be obliged, then, to provide them with slaves, which I must buy, and at a higher than the usual price, as these will be good ones; for I keep no fettered slaves myself, and there are none upon the estate. For the rest, the price, you must know, is three millions of sesterces. It has formerly gone over five million, but owing, partly to the general hardness of the times, and partly to its being thus stripped of tenants, the income of this estate is reduced, and consequently its value.”

It is evident that Pliny did write about a whole variety of details of production and economic importance. It is clear that the land, although of good quality, had suffered under mismanagement by its previous owner, and that the land has meadows, vineyards and wood (where returns are also mentioned), just as it is clear that Pliny will need to invest into slaves (at a higher price than the average market price) in
order to attempt to rectify the situation. Furthermore, Pliny even mentions that the current sales price is 3 million, while the original price before mismanagement (and the ‘hard times’) stood at 5 million. It is exactly this aspect which is confusing, as Finley claims that Pliny mentions none of this, and yet Pliny clearly does - in the very same letter that Finley is quoting from, which is only some 500 words long. One can hardly claim Finley to purposely omit such information, and as such it is hard to understand how Finley could make such a glaring ‘mistake’? Furthermore, Finley’s claim that Pliny mentions no economies of scale or efficient use of the labour force cannot be true either. Pliny writes: “the advantage as well as pleasure of being able to visit it without additional trouble and expense; to have it superintended by the same steward and almost by the same sub-agents, and to have one villa to support and embellish, the other just to keep in common repair. I take into this account furniture, housekeepers, fancy-gardeners, artificers, and even hunting-apparatus, as it makes a very great difference whether you get these altogether into one place or scatter them about in several. On the other hand, I don’t know whether it is prudent to expose so large a property to the same climate, and the same risks of accident happening; to distribute one’s possessions about seems a safer way of meeting the caprice of fortune”.

Pliny is essentially describing some of the most basic tenets of a merger and acquisition (M&A), where for example, he mentions that he can cut eventual management labour costs by using only his ‘own’ steward and sub-agents (with minor additions) where before there must have been an additional steward and sub-agents working for the other plot of land (i.e. if each plot of land had one steward and 10 sub-agents, now the combined land can have one steward and 15 sub-agents, implying cutting the cost of 5 sub-agents and 1 steward). Another example is his mention of the danger that this M&A will cause him to possibly be less diversified, i.e. it could be better to purchase land in some other region in order to lower the risks of poor weather assaulting one area. In combination with the earlier quote by Pliny, what more does Finley expect Pliny to express in a 500 word letter (English translation) to his friend? This is not a financial feasibility study, it is a letter to a friend, and furthermore, it actually entails adequate information to be able to make a sufficiently balanced assessment of the situation.

Essentially, what Pliny is attempting to explain in his letter is directly related to his mention of the ‘original’ value of 5 million before mismanagement (although he does
also account for the ‘hard’ times). As the purchase price is at 3 million, and it used to be worth 5 million, Pliny is hopeful that through better management and additional labour in the form of ‘good’ slaves (above market value) he will be able to reach the ‘original’ value. He is, however, aware that 5 million might be unattainable due to the ‘hard’ times, but as he mentions that the land itself is fertile and well-watered, it signifies that the main problem (besides the general economic ‘hard’ times) must be in labour and management because the soil was ‘neglected’ as a result of some tenants leaving. Pliny will therefore hire (actually purchase) new labour (slaves), fire the steward and the majority of the sub-agents of the purchased land, and enforce his own management structure (which must have been performing well on his own lands) which would attend to the new land as well. The act of purchasing slaves and not searching for tenants is a signal that Pliny wants to remedy the situation straight away, as he does not normally keep slaves. As for discharging most of the old management structure, not only would this have cut costs in the long run (relative to having two management structures attend to each plot of land) but it would also have provided relief from previous poor management structures. From another of Pliny’s letters it is known that he was very busy in wine production and that he had several merchant partners, and as such it is clear that he knew what to do with the vineyards on the new plot of land. As for the other produce, it would also probably not have required any specific expertise that he and his management might have been lacking. The risks of this enterprise would have been that his investment would be less diversified than if he would have purchased land further away, and that the cost of the slaves plus better treatment of the remaining tenants would not have counteracted the gains from an improvement of the land, the lower management costs, and the general economic ‘hard’ times. As for the financing, since it would have most probably come from his mother-in-law the interest rates would have been either low or non-existent: with reference to her, Pliny writes “[her] purse I can use with the same freedom as my own”.

As is evident, Pliny has essentially explained everything that is needed in order to understand his situation. Furthermore, in reference to the preceding paragraph De Martino reaches a similar conclusion. Additionally, he also mentions that the ‘hard’ times Pliny speaks of pertain to general conditions in agriculture that are related to a lack of available workers, poor cultivation, and a decrease in profits. To conclude
this section, it has to be clear that Pliny’s letter was merely a letter to a friend, and not a financial feasibility study for his managers; yet, he still mentions everything that is needed in order to make a reasonable assessment of the situation. Instead of disproving economic rationality in Roman society as Finley attempts, Pliny’s letter actually proves it.

**Agritechnology & Yields**

From Pliny’s example, no matter how much Finley claims otherwise, it is clear that landowners truly were interested in economic profit and that they would invest money into their land for that very purpose. This investment and desire for greater profit in the Roman Empire, in combination with the capitalistic market (competition, information, etc.), would act as a catalyst for technological progress within Roman agriculture. The previous section on agricultural thought mentions that the Romans were eventually capable of producing both quantitatively and qualitatively more from a plot of land: this can be attributed to an increase of technology in combination with greater access to capital. In fact, curiously enough, a quote by Finley not only mentions technological progress but it also defends this progress from the most often cited attempt to disprove it: “It is then asserted…that slavery impeded technological progress and growth in productivity, that even the servile ‘colonate’ of the later Roman Empire, the forerunner of medieval serfdom, was more efficient because *coloni* (not to mention free tenants) ‘were more interested than the slaves in the result of their labour’. Dogma again: one has to come down to the fourteenth century in England and France before wheat production, for example, regularly matched the fourfold yield which appears to have been considered as the target for the slave-worked estates in ancient Italy, and one can point to some technological progress precisely where slavery showed its most brutal and oppressive face, in the Spanish mines and on the Roman *latifundia*.”

This quote is interesting from a variety of aspects: firstly, Finley claims that there was agricultural technological progress, secondly, slavery did not hinder this progress, and thirdly, it took until the 14th century for England and France to reach the levels that Finley believed the Romans were attaining. Even though the yields will be proven to actually be better than Finley believed, it is nonetheless important to understand that there most definitely was technological improvement.


**Agri-Technology**

According to ten Brink, by the very end of the Republic, certain ‘technological’ advances had already been discovered. Some examples being: the knowledge of the benefits of letting land go fallow, continuous planting, and the implementation of seed rotations. Pliny for example, mentions great advances in the field of press-technologies for the production of wine a hundred years before his time. Another example is in 50 BC where the cultivation of the ‘continuous-vine’ was invented which gradually prevailed over other forms.\(^{496}\) Even though in the eyes of a modern viewer these examples might not sound very ‘technological’ they were still advances from previous forms and to that extent some of these were only possible with larger amounts of capital and the ability of the farmer to experiment - two aspects which would be hard to find in a subsistence economy (not to mention that some/many of the advances mentioned in this section were ‘forgotten’ during the Dark Ages). However, this was not the end of the advances that were made. According to De Martino, there was an ever larger number of experimentation with different plants during the Principate which was naturally combined with rational technical methods of farming.\(^{497}\) For example, a large variety of new plants were brought to Italy and subsequently grown there: apples, millets (approx. 40 A.D.), cherry, linen (which was grown in the Po region), etc.\(^{498}\) The fact that experimentation with a variety of plants was not a purely Italian phenomenon is mentioned by Drexhage, Konen, and Ruffing who mention that a plethora of grain types was grown throughout the empire, after having been adapted to the various local conditions.\(^{499}\) In combination with that, they generally mention a flourishing trade in seeds: there was a desire, and attempts were made, to improve the harvest by planting different types of seeds and to experiment by achieving the best product for the conditions available.\(^{500}\) Another technological progress occurred in the realm of fertilizers in order to combat soil exhaustion, especially during the Principate, as not only did the usage increase but the types of fertilizers became more numerous too.\(^{501}\) In many cases the fertilizers were either manure, which is evident in the northern Provinces and in central Anatolia due to the higher concentration of livestock and winter stabling,\(^{502}\) or some form of compost, like fallen foliage, marl, saltpetre, skins of pressed grapes, etc. in those regions with fewer livestock. According to Drexhage, Konen, and Ruffing, there must have been a combination of the two in the Mediterranean areas; for example, in Palestine bags
were hooked onto the ends of the animals to collect manure, and later compost was added too. The results were such that in a 7 year cycle only 2 years were intended for leaving the land fallow. However, in general, compost was the most frequently used fertilizer in the areas of intensive ‘horticulture’ in the Mediterranean. Even more technological advances that were connected to actual ‘industrial’ processes appear during the early Principate, evident in the improvements made on ploughs. A variety of new types of ploughs came into existence that were capable of ploughing heavy ground; for example, Drexhage, Konen, and Ruffing mention that in a study of Roman Italy, through intensive and deep ploughing (partially on account of the new ploughs) the richness of the soil was subsequently improved. Even more advances connected to industry can be inferred from the extensive improvements in irrigation, and even though construction will be examined in a later section, it is a well known fact that the Romans were masters of irrigation and water transport systems.

Even though these were merely some examples of the advances made in agriculture, it is nonetheless clear that advances existed, and that a large number of them were definitely tied to an increase in capital (especially irrigation) and/or access to a large market (e.g. the seed market). Furthermore, the idea that the Romans were only capable of having a two-field rotation system which is generally perceived, is incorrect. They were certainly capable of far better systems and had the three-field and/or crop rotation systems which allowed for little fallow time. Which system was actually used depended on the region because soil conditions, irrigation and the consumption patterns were different in each region. As an example, the volcano soil of Campania was capable of supporting all year long field crops, while other regions required more effort. As a concluding remark, it is perhaps interesting to note that according to White, in eighteenth century England there were books “designed to encourage contemporary farmers to cultivate their lands with something approaching the skill and versatility of the Romans.” In fact, as an example, White cites an American farmer who says that Roman agriculture “is indeed the foundation of modern farming, embodying many principles, such as the value of leguminous crops as a preparation for wheat, for which modern science has only recently found an explanation.” Another example is when White writes: “The degree of technical skill and adaptation to varying climatic conditions attained by Roman cultivators of the vine and the olive was so high that in medieval times and even today [(1956)]
their methods are still followed.”

In other words, a supposed subsistence economy was capable of achieving agricultural standards and methods that England in the 18th century wanted to emulate? Or how is it that this subsistence economy achieved such degrees of technical skill in vine and olives that the methods were followed until at least the mid-20th century? Obviously this cannot be, and the answer has to be that the Roman system was not a subsistence economy, but a capitalistic market economy where such advances could have been made.

**Yields**

That the Romans were ‘advanced’ from a technological and technical perspective, as already mentioned, also becomes clear when examining the yields attainable. The ‘easiest’ way to do this is to compare seed yield relations of grain, but it has to be clear that grain was not the only food source, and that it is only used due to the greater ease in calculating yields. As Drexhage, Konen, and Ruffing correctly mention, the grain yield comparison system is not ideal since other types of food, especially legumes, vegetables, olive oil, fruits, meat and fish products also played a significant part in the Roman menu. Furthermore, the focus on grain can lead to an oversight towards other agricultural products, forgetting products that were intensively irrigated, such as vegetables, fruit, vineyards and olive trees. Until the 3rd century the Principate was at the high point of work and capital intensive wet soil culture, and as such, it required high costs with an aim for making large profits.

To purely focus on grain would skew a reasonably accurate portrayal of agricultural yields, especially since the technical standards that were achieved in wine and oil production remained until the mid-20th century - and not those of grain. However, due to the fact that grain yield comparisons are the most frequently used form of comparison, they will serve that purpose in this section too.

The first point will be to re-examine Finley’s earlier quote where he mentions a fourfold yield of grain in Italy. The citation is originally from Columella, which speaks for its authenticity, and Finley mentions that this yield was equivalent to 14th century England and France. The two interesting aspects of this are that Italy was not focused on grain production in the 1st century A.D., and by the 14th century England had experienced an ‘advance’ over older forms in its agricultural technology. According to White, and a point that is generally concurred with a variety of other
authors, “we have no ground for assuming that the low average yields of Italy represent the normal pattern in the great wheat-producing areas of the empire. Cereal production over the greater part of Italy had long ago ceased to be a paying proposition. Even in Cato’s day [(2nd century B.C.)], a field of corn ranked only sixth in order of profitability. How much of Columella’s yield came from farms in which cereal production was a mere side line?...It has been noticed that Columella’s own estates in Italy were worked on the intensive pattern...with the main emphasis on vineyards and orchards, and grain as a subsidiary crop between the rows.”

In the most basic terms, Italy was not interested in producing grain except as an ‘aside’ and it preferred to focus on other products while importing a large part of its grain from the ‘true’ grain producing centres such as Egypt, North Africa, etc. This means that by using Italy’s grain yields in the 1st century A.D., a lower yield of grain than what was usually attained is revealed. This is easily proven, for example, by Varro and Pliny the Elder who mention that North Africa, Baetica, Palestine and Syria produced yields in the range from seven to fifteen, depending on the province. Egypt was even more fertile, and even though the yields of Pamphylia and central Anatolia are not known, they must have also been high. Knowing that the Roman Empire specialised some of its production - especially the production of grain in certain areas - and that areas like Italy specialised on other products and imported their grain, it becomes evident that using Italian grain yields as a norm is not ideal for calculating grain yields in the Roman Empire. Additionally, it also has to be clear that the actual grain producing areas within Italy (Etruria, Umbria, Picenum, etc.) were also capable of yields higher than the fourfold level. This is easily proven by examples from Varro who mentions that the yields of those regions ranged from ten to fifteen. More evidence comes from Cicero, who mentions yields of eight to ten on Sicily. The conclusion, as such, seems to be that the main grain producing areas of the Roman Empire were capable of yields in the range of 7 to 15, while the areas producing grain as an ‘aside’ (or the small-scale ‘subsistence’ farms) had yields of 4. It is therefore clear that grain production as an agricultural enterprise was actually better than its 14th century equivalents, especially considering that yields of 4 to 15 are higher than in the late middle ages (13th-16th centuries), according to Drexhage, Konen, and Ruffing. In fact, according to White, “Stevens notes that observers of Italian agriculture before the Industrial Revolution give figures which tally exactly with those furnished by the ancient authorities.” Another important aspect from Finley’s quote, is that he...
compares the Roman fourfold yield to the English yield in the 14th century, which is interesting from the knowledge that by the 13th century England had by large become a country of three-field rotation systems. In essence, this means that in order to measure up to Roman agricultural production, even in areas that were not specifically meant for grain production, England had to adopt the three-field rotation system because the two-field system was insufficient. Beyond showing the sophistication and strength of Roman agriculture, it also proves that the Romans had definitely progressed beyond a two-field system as mentioned earlier.

As a final conclusion, it is clear that Roman agriculture was very sophisticated, and that it was able to reach yields in grain production comparable to early modern times before the Industrial Revolution. Furthermore, in other agricultural areas there is even evidence that the techniques used by Romans pervaded into ‘modern’ times as well. How primitivists try to claim that such an occurrence could have been achievable in a subsistence economy is not at all clear, especially when considering their stance that many of these Roman advances ‘apparently’ disappeared after the decline of the Roman world. As an additional interesting aside note, according to Drexhage, Konen, and Ruffing, on account of various studies of Roman agriculture in Africa, Syria and Asia Minor, they actually question if the production in these areas was able to reach the same level of Roman production (during the high point of the Principate) before the 20th century. In essence, this means that these areas in the 19th century were either below or just at the level of Roman production, which is further tremendous proof of the true agricultural strength of the Roman Empire. The answer therefore, can only be that the Roman Empire was a capitalistic market economy because it did definitely not experience an Industrial Revolution, which means that the only way that it could have achieved such yields is through the intensive use of capital and work: factors that would be unachievable in a subsistence economy.
Roman Secondary Sector

Introduction

Roman industrial labour existed approximately along the same lines as did agricultural labour, at least in terms of the four main types of labour: owners/family, lease-holders, labourers, and contractors (agents/managers). The owners and family members could work in their own workshops, or they could lease out the workshop to third parties according to the law of *locatio conductio res*. Labourers could be hired to work on a short-term or long-term basis for either the owner or the lease-holder(s), and/or contractors could be hired to take part in the process, as agents/managers. Labourers were paid through monetary means, even if they were just hired for daily tasks. Slavery, although predominant in some industrial branches during the Republic, most definitely was not the predominant form of labour during the Principate. The basic nature of the four types of labour has been sufficiently covered in previous section so a re-examination would be redundant here, as such, only the more industrially ‘unique’ aspects will be covered. The main differences to be kept in mind are that industry could exist in both rural and urban locations, while agriculture could only exist in rural areas, or in ‘suburban’ areas. For example, according to Kloft, there was the *fundus suburbanus*, an estate which lay in a radius of 15km of a city. It was an ideal location for an investment due to the proximity of the city and ease of finding consumers who had a demand for higher-end agricultural goods. The specialised products tended to be fish farms in ponds/lakes, various pastoral and even ‘wild’ animals (boar, deer, etc.), various birds considered to be delicacies, honey, etc.

According to Rostovtzeff it is clear that industry spread quickly throughout the Empire and that it pushed aside the in-house made products, even in the remotest regions of the Empire. He mentions the example of discovered remnants of items in an Egyptian village. Almost no items found in the town were made in-house, everything was bought in the shops or at the market. The same accounts for the graves of the lower classes in the entire Empire, both in cities and in the countryside. Even though the purchasing power of the population in the rural areas and of the lower classes in the cities may have been low, the number of consumers was large. As
such, the masses wanted cheap wares: the cheaper the better. These factors led to ‘mass production’. Rostovtzeff’s theory of non-in house production is also agreed upon by De Martino, who mentions that sufficient amounts were produced ‘outside’ the household system; one cannot therefore speak of a household economy or of a barter economy. In order to achieve such amounts of production so that the vast majority of the lower classes, both in rural areas and in urban areas, had access to non-in-house fabricated wares not only speaks volumes for the extent of production, but also for the market in being able to bring the wares to the location of demand. That both of these aspects are truly only possible in a capitalistic market economy and not in a subsistence economy need not be reiterated.

The actual size of the industrial production regarding the workshop, factory, or enterprise, varied depending on the particular industry. For example, both the construction and mining industries relied upon thousands and even tens of thousands of workers for one project. Some industries like clay, textiles, leather, and metallic wares could employ several tens, and possibly, like for ceramics, almost a hundred workers in the same workshop/factory. Below these stood the multitude of other industrial branches which could employ several or only few workers in each workshop, such as glass workshops. In essence, it all depended on the supply and demand and the type of industry; however, as a general rule, the industrial capacities of the industrial revolution were never attained, nor did the ‘modern’ factory ever come into existence. Production was mainly conducted within the range of middle to small workshops; however, judging from the amounts produced, there were a lot of workshops. According to Kloft, there was an extensity as opposed to intensity of production, so there were many small businesses in close proximity to each other, and very few large-scale enterprises. Large scale industries existed only in the pottery and construction industries.

A further general aspect of industry, much like that which was touched upon in Roman labour and agriculture, was the ‘tremendous’ amount of division of labour and specialisation of labour. As a reminder, Ludwig von Mises claims that: “it is certainly true that in the second century A.D., the Roman Empire nurtured a very flourishing civilization, that in those parts of Europe, Asia, and Africa in which the Roman Empire rules, there was a very high civilization. There was also a very high
economic civilization, based on a certain degree of division of labor. Although it appears quite primitive when compared with our conditions today, it certainly was remarkable. It reached the highest degree of the division of labor ever attained before modern capitalism. That a subsistence economy could attain levels of division of labour not attained before modern capitalism is not clear. In essence, in order to have such a high division of labour would require that everybody involved in the production process is capable of living off of the work, for otherwise there would be no division. This clearly involves a significant increase in demand, coupled with an increase in production, especially mass production, and an increase in capital. Once more, this is not possible in a subsistence economy, but in a capitalistic market economy such as the one present in the Roman Empire. In order to provide a more detailed picture, the following is a list taken from ten Brink, regarding examples of a variety of jobs from Rome and its surroundings (the list is not complete and it omits the Latin terms):  

1. In the construction and interior business there were: surveyors, master builders, stone and marble workers, sculptors, lime burners, masons, various types of carpenters, painters, mosaic workers, demolitionists, various cabinetmakers and table makers, workers responsible for preparing specialized wood and ivory, glue producer, deliverer of reeds, etc. Private building contractors were active in both the public and private sectors as both large scale contractors and small handicraft workers for special tasks and repairs.

2. In the iron, lead, copper, and bronze production there were various ironsmiths, specialists for nails or various cutting tools, for swords, helmets, lead pipes, locksmiths, coppersmiths, bronze workers, sickle and scythe producers, etc.

3. Luxury articles like gold, silver, pearls, gemstones were worked upon by various specialised craftsmen or artisans. Glassblowers could also be found.

4. For the supply of fibres and textiles workmen were found in the following positions: wool classer, wool spinner, wool handler, wool weaver, linen specialist, felt worker, sack maker, ropemaker, washer, dyer, purple specialist, colour weaver, lace producer, tailor, cloth merchants of all types. Textiles were often imported in large quantities, but were also produced in Rome.

5. In the Roman fur and leather business, the following workmen existed: furriers, tanners, specialist shoe, boot, sandal producers, cloggers, belt makers, saddle makers, producers of shields and tents, sacks and hoses.
6. Numerous amounts of clay could be found in Rome and its surrounding areas, which allowed the clay to be used by: potters, figurine makers, crockery and container producers, producers of urns, sarcophagus, lamps, bricks, pipes.

7. For foodstuffs there were: millers and bakers, special bakers for wheat bread, cakes, and confectioners, various butchers, sausage or ham salesmen, cookshops and innkeepers, fish vendors, wine or olive oil vendors, fruit and vegetable vendors and deliverers.

That the Romans had a truly high division of labour is also attested for by Hopkins where he mentions an incomplete list of some 262 jobs at Rome in contrast to 350 occupations from London in the 18th century. Additionally, it also has to be clear that beyond a general division of labour and specialisation in parts of production of end-goods, industry, much like agriculture, also specialised in certain areas where some form of competitive advantage existed.

Regional specialisation either came about because certain industries were predominantly located in a few regions, or even because certain regions specialised in products that were specific to local tastes. Some examples of specialised regions are: Arezzo for its terra sigillata, which included plates, bowls, cups, etc., at least until the mid-first century A.D.; Egypt for its papyrus, glass and linen; Syria for its wine, silk, purple colours, glass, perfume; Gaul for its skins and metallic products; Africa for its oil, wine; Britain for its silver, iron; Spain for its iron, silver, gold, wine, oil, etc. An example of specialisation in combination with trade is mentioned by Kloft, who writes how fine citrus wood from Africa was shipped to Italy or Gaul in order to be manufactured into high quality products; for example, a luxury table which was sold for 1.3 million sesterces (easily 1,300 times the ‘average’ salary of a worker who had managed to work all year long). Yet another form of specialisation, or an attempt to attain economies of scope, was the combination of workshops and retail shops intended for the same product in the same area. According to Rostovtzeff, this is attested for in Pompeii: by combining both types of shop in the same area of a city would have brought an increase in profitability due to lower transportation costs and the easier sharing of information amongst retail in production. This was probably very typical for other ‘industrial’ regions in cities elsewhere.
With regard to the question of technology, depending on the exact industry, there were some signs of ‘advanced’ technology - at least in comparison to early modern Europe - but in other cases technology was more similar to the late Middle Ages. One of the larger problems lay in the fact that no patent laws (or similar barriers) existed, so any technology or knowledge could be copied, and generally craftsmen who had worked in a larger workshop would at some point leave the workshop to set up their own in a different location, copying what they had learned. As such, unless there was some specific competitive advantage inherent to a region (access to high quality materials, etc.), industry did not intensify into a few large factories as it did during the industrial revolution. Instead, it divided into many smaller workshops located wherever there was demand or a potential for demand, even if this demand was on some of the larger estates; for example, some estates had potters, weavers, carpenters, etc., who not only produced for the estate but also for the market. However, it should be sufficiently clear that even though no large factories came into existence, the many small to medium workshops still increased production and managed to produce for mass consumption purposes. Additionally, it also has to be clear that the many workshops throughout the economy were not always ‘single’ entities. Aubert extensively proves that many workshops were actually owned by one person, who instead of centralising, decentralised production. In essence, the various workshops can be seen as branches and not sole standing. However, exactly how many workshops were sole standing and how many were actually a part of a larger organisation is not clear.

By this point is should be sufficiently clear, in rough terms, how industry functioned, and that it could have only functioned and existed in this way as a capitalistic market economy; however, in order to grant an even better insight, a few randomly chosen industries will be examined in far greater detail.

**Hidden Industrial Production in Agriculture**

It is important to acknowledge that even from the onset of urbanisation, industry has existed in both rural and urban areas. However, there is often a tendency to automatically equate industry with urban areas: a viewpoint that is frequently taken in modernity even though a significant amount of industrial production takes place
outside of urban areas. It is evident that a variety of Roman scholars make the same mistake, for example, Hopkins mentions that “the bulk of the labour force in the Roman empire, perhaps 80-90 per cent, were primarily peasants.”\textsuperscript{543} and this, also according to Hopkins, in an urban population of 10-15 per cent.\textsuperscript{544} Even though urbanisation figures have been proven in a previous section to have been somewhat higher, this would still nonetheless signify that the majority of the labour force was living in rural areas. In Hopkins’ defence, in neither of his two papers (which these percentages are taken from), does he actually deny that peasants conducted more than agricultural work, but on the other hand he never refers to it either; he only mentions peasants conducting agricultural work and farming which heavily suggests that he does not believe 80-90% of the labour force was capable of working in either services or industry.\textsuperscript{545} Irrespective of the fact that his urban ratio is too low (as this paper has already proven), he still cannot be correct in equating rural areas with agriculture alone, because as already mentioned in the previous section, the ‘peasants’ did more than just farm. Beyond the transportation and industrial work that these ‘peasants’ may have also conducted, it is very likely that within some of the agricultural work that they performed there was a hidden, integrated element of industrial production. As already mentioned in the ‘3-sector Hypothesis’ section, when production processes are categorized according to sector, manufactured food is assigned to the industrial sector.\textsuperscript{546} This means for example, that the actual production of wine and olive oil falls in the industrial, and not in the agricultural sector. The act of planting, growing, and harvesting the fruits naturally falls under agriculture; however, the moment these fruits are ‘transformed’ through a manufacturing process, the activity should be considered to be an industrial process. Taking the example of a simple hypothetical exercise: if only 100 people exist in the world and they only produce wine - and they are involved in the process from beginning to end - then their work would be divided according to the sectors. For example, statistically, 80% of the labour effort would be conducted in agriculture while the actual ‘industrial wine-making’ process would require 20% of their overall time: thus, the work is divided into both the agricultural and the industrial sectors. In reality it is naturally very hard to distinguish and to appropriately calculate such an occurrence, but it has to be clear that this is how it should be done. Additionally, it must be clear that wine and olive oil have only been referred to out of convenience in the previous section on agriculture, because it would not have mattered to the Roman agronomists which sector of the economy these
yields applied to. This is, however, not to imply that the Romans did not understand that there was a difference between growing the fruits and then manufacturing them into another type of food. In fact, it is perhaps ironical that the Romans themselves implicitly understood the difference between agriculture and industry in food production - better than some Roman scholars. An illustrative example can be taken from the previously cited contract with the redemptor, where the redemptor was obliged to hire strictores and liguli for the picking (tree-shaking) and the gathering of olives. The key aspect here, is the fact that other than these agricultural labourers, the redemptor was also obliged to hire factores: labourers working in olive oil production.\textsuperscript{547} Beyond the structured division of labour in agriculture which involved the hiring of labour for specific jobs as ‘simple’ as tree-shaking and olive gathering, there was also a clear division between agriculture and industry. In essence, the strictores and liguli are agricultural labourers, while the factores are industrial labourers. As such, if the Roman division of labour inherently allows for a distinction to be made, there is a complete confusion as to why a variety of Roman scholars equate the factores to agricultural labour. That such divisions of labour also existed in other manufactured food processes is very clear; for example, in wine-making the industrial workers were called custodes and/or capulatores.\textsuperscript{548} To that extent, even if the industrial production was not as directly or closely tied to agriculture - and services (such as rural transportation) are considered in the equation - it is still evident that the rural percentage of labour does not equate to the agricultural percentage. This is further complicated by the fact that the majority of scholars who do equate it, do not actually explain why: they do not explain why a factores would be considered an agricultural and not an industrial labourer. Perhaps these scholars believe that these activities are neither manufacturing nor industry? However, it is a known fact that in order for wine or olive oil to be created, the fruits undergo a manufacturing process which involves machinery – in the form of a winepress or an olive press - that is not particularly cheap; furthermore, the individuals working as part of this process are most certainly working in the industrial sector.

\textbf{Industrial Sectors}

To fully and equivocally examine every industry possible within the Roman Empire would be a task far beyond the parameters of this thesis, and as such, only a select few industries will be examined. In particular, the majority of industrial branches
mentioned will be chosen because of the possibilities that existed for people in rural labour settings to find employment, and also in order to illustrate the options available to rural labourers outside of agriculture. There will, however, also be a mention of one or two exclusively urban branches.

**Textiles**

In the first instance, a self-evident, non-agricultural industrial branch is the production of textiles and clothing. Even in a world of human subsistence, there is a need for clothing. Beginning from the most basic viewpoint, even ‘subsistence’ peasants would have needed to spend some of their time producing clothing, which implies that they could not have been working in agriculture 100% of the time (this proves once more that rural labour ≠ agricultural labour), unless some scholars believe that textiles belong in agriculture. Irrespective of this fact, the reality of the Roman Principate was such that on average, a minority of people produced their ‘own’ clothing; in most cases the majority acquired their clothes through the market. For example, Jones writes that “household weaving, however, can have been of little economic importance. How far the poor wove their own clothes we do not know, but the majority seem to have bought their garments…Even a poor man normally bought ready-made clothes.”\(^{549}\) Furthermore, he writes: “Weaving was then in the main a professional occupation, and clothing an object of trade.”\(^{550}\) Jones’s two quotes cannot be more specific and they clearly imply that a textile industry existed which transcended the level of a simple closed household industry. If the majority of the population purchased their clothing - taking into account that a segment (possibly a large minority) actually produced it themselves\(^{551}\) - the majority was nevertheless purchasing clothes produced by a minority, which automatically implies not only specialisation, but also a non-subsistence economy.

The actual labour force working in the textile business was as diversified as any other sector of the Roman economy: it included owners, managers, simple labourers, etc. An example of a labour relationship is the example cited previously of a long-term contract where a slave girl went to work for a weaver for a period of 4 years.\(^{552}\) Further evidence comes from Smolders,\(^{553}\) Jones,\(^{554}\) and van Minnen\(^{555}\) who mention a variety of textile labour contracts that involve the hire of male/female slaves and
male/female free labourers. Furthermore, as already mentioned, the rural peasants could also find work in the textile industry, as for example mentioned by Erdkamp, who writes that “underemployment provided the opportunity for the employment of cheap, rural labour in the textile industry in the Roman world”. How this process actually worked does not seem to be entirely clear; however, it was probably analogous to ‘proto-industrialisation’ in 17th-19th centuries where “a merchant capitalist distributed raw materials to working families, took in the goods when processed, paid piece rates for labour, and arranged for the finishing and sale of commodities. These arrangements dominated the English and much of the European production of cottons and woollens”. As already mentioned, it is not clear whether this is the same method by which rural labourers who also worked in the fields actually produced textiles, but it is certainly possible, and this is attested for by Viswanath who mentions farmers in Roman Palestine producing flax and woollen thread (not clothes) additionally to their agricultural work. The implication is that the farmers produced part of the requirements for the textile, and then sent it to the cloth/textile makers who produced the finished product.

Another possibility, connected to the first example, is that the ‘capitalist’ did not actually distribute the raw materials to working families, but that the families came to work (or were already present) for the capitalist on his/her estate. As Jones mentioned, it was possible for even larger estates to have individuals producing textiles. In essence, taking the example of Isidorus and his 20,000 employees, it would have been easy for Isidorus to have his own textile manufacturers (be they slaves, tenants, or free peasants/labourers), even if he was not particularly interested in becoming a textile producer; alternatively, he could have had them working on his estate for the purpose of selling the products on the market. Erdkamp writes that large slave-run farms and in general, large-scale landowners, could use the labour from other resources of their land not directly connected to agriculture: “The owner…therefore had two options: either to employ day-labourers at peak times or to use part of his labour external to the agricultural practice…it provides another example, however, of the connection between agricultural and non-agricultural sector.” Many of the largest estates were capable of producing their own textiles, bricks, amphorae, etc., in some cases not only for personal needs, but also to be sold in the market. It is only important to remember that irrespective of whether the
products were meant for the market or even for ‘self-sufficient’ purposes, the production on these estates would have been organised and structured just as rationally with a high division of labour as the Roman ‘norm’. This means that production, even for ‘self-sufficient’ purposes, was not the kind of production inherent in a subsistence economy (where one individual creates the object from beginning to end). However, before this line of reasoning becomes too farfetched, it has to be clear that according to evidence, the actual majority of textiles were produced in a variety of specialised production centres and only the smaller and less market-accessible regions tended to produce locally (which could have possibly applied to some of the largest and most distant estates).

A few examples of these ‘famous’ centres are the linen-weavers of Egypt – especially those from Alexandria, the linen-weavers of Tarsus (Asia Minor)\textsuperscript{562}, and the wool cloth/clothing producers of Pompeii.\textsuperscript{563} In some cases, not only specific cities, but entire regions were renowned for their textiles. An example of this is Syria which was known for its linen, Italy for its wool, and especially Asia Minor, which was renowned for both wool and linen. As a subset of textile production, some areas were also famous for their dyes, for example in Pompeii.\textsuperscript{564} The list could theoretically continue, and in some cases it could change according to ‘newer’ centres pushing out the ‘older’ ones, or it could even be narrowed down to specific types of textiles: for example, bed covers, types of clothing, etc.; however, this would fall outside the scope of this paper. As an interesting titbit, it is interesting to note that some regions’ ‘fame’ even spread beyond the borders of the Roman Empire. For example, according to Rostovtzeff, there was a large export of dyed cloth from Egypt, Asia Minor, and Syria to central Asia and India.\textsuperscript{565}

The centres in question, be they regions or cities, naturally entailed a large amount of individuals specialised in their tasks, which suggests a significant amount of focus on competitive advantages. For example, during the beginning of the second century in Tarsus, a large proportion of the population were linen-weavers. According to Jones, these people earned ‘modest’ sums and were free. They seem to have been organised in “small family workshops, with a few apprentices and labourers, slave or free, as in the villages and towns of Egypt. It is also possible that the Tarsian linen-weavers were free paid employees of factory owners.”\textsuperscript{566} Whatever the exact nature of the set-
up in Tarsus may have been, it is clear that due to the large amount of workshops operating in proximity to each other, the context must have created some kind of an increase in productivity and efficiency. This is not to claim that each workshop only focused on one aspect, or that they were actually working in conjunction with each other, but it is sufficient to claim that the breadth of knowledge and the ease of access to the correct distribution channels within Tarsus would have facilitated an increase in productivity (in contrast to ‘lone’ workshops in ‘random’ regions). A development of this kind is only feasible in a market economy, as it is hard to imagine how a subsistence economy would allow for the existence of a centre of production that produces ‘chiefly’ linen - especially linen that is sold not only throughout the Empire, but also beyond it. Furthermore, even though most of these famous centres were known for their middle to higher-end garments\textsuperscript{567}, it does not mitigate the strength or existence of a market economy. Firstly, there was still a need for a significant amount of buyers empire-wide who actually had the funds to purchase these products, which implies that some were capable of accumulating profit; and secondly, if India and Central Asia were capable of receiving ‘large’ exports of these products, it is an indication that the internal Roman trade of these products was even larger (due to lower transportation costs, and most probably a greater standard of living). Additionally, there is evidence that lower-end garments were not always produced locally; for example, according to Jones, a “few very large towns, which like Rome had no local weaving industry, may have provided a market for cheap clothes produced elsewhere”\textsuperscript{568}.

As a conclusion for the section on the textile industry, it has to be clear that even though a certain amount of textiles were still produced ‘in-house’, the majority of textiles were actually produced by professionals for the purpose of a market. As a result, on account of various competitive advantages, some locations became centres of production - perhaps not on the level of the industrialised countries in the 19\textsuperscript{th}/20\textsuperscript{th} centuries, but at least on some ‘proto-industrialised’ level - which also implies a significant amount of consumers with extra-disposable income. Additionally, labour (of whatever kind: owner, labourer, etc.) is seen to mainly consist of freeborn and to a lesser extent of slaves, and furthermore, the textile industry also supplied some ‘peasants’ with additional income for producing basic parts required for the production of textiles. This can only serve to illustrate the nature of a capitalistic
market economy and of a textile industry that may not have ‘industrialised’ with the onset of large factories, but which nevertheless reached the level preceding industrialisation.

Glassblowing

Although there was no tendency in the Roman glassblowing industry for the employment of rural labourers or large amounts of individuals in any one particular workshop, it is nonetheless important to examine this industry for two reasons. Firstly, technological advances are not only attested for in this industry, but the actual periods and the types of technological ‘jumps’ are also known. Secondly, it is the one industry which not only demonstrates how it is possible for an industry to spread throughout an Empire, but also how various key industrial centres come into existence on account of market forces. Furthermore, it shows similar characteristics with other industries. According to Stern, the “beginning of commercial glassblowing coincides roughly with the creation of the Roman empire. Within half a century the art of glassblowing was transformed from a local Syro-Palestinian craft to an empire-wide enterprise.”

This aspect makes it very valid for the Principate as it gives a unique insight into economic conditions prevalent in the Empire. As such, the work of Stern called “Roman Glassblowing in a Cultural Context” will prove to be instrumental in the examination.

The first glassblowers appeared on the Syro-Palestinian coast, and the glass industry then emerged around the beginning of the Principate (under Augustus) in Italy as well. Stern attests that the glassblowers were not slaves, but freeborn: “The hypothesis that in the Roman empire glassblowers moved about freely, setting up shop where there was a market for their products, is supported by epigraphical evidence.” This aspect is important to understand, because it meant that the glass industry willingly came to Italy, implying that the individuals working in this industry considered the ‘move’ there a profitable one. The other option was to remain in Syria and ship products to Italy, but instead, there is significant evidence that a number of glassblowers moved to Italy (this does not imply that the industry completely ‘left’ Syria). According to Stern, this expansion into Italy could only have come about due to the fact that “Italy experienced an economic boom that attracted artisans and
merchants from all corners of the empire, and especially from the eastern Mediterranean. Most of the areas where glassblowers settled—Rome, Campania, and the northern Adriatic coast—already had longstanding commercial contacts with Greece and the eastern Mediterranean. Finally, glassblowing itself probably did not require a huge investment in expensive new tools because the earliest vessels could all have been blown with inexpensive blowpipes fashioned by the glassblowers themselves.572 The fact that glassblowers moved to Italy during the economic boom it was experiencing, is a very strong sign of not only a market economy, but it also incidentally proves various aspects mentioned in this paper. First of all, that the standard of living in Italy had generally increased, and secondly, that the plethora of slaves working in Italy did not cause labour costs (at least during the Principate) to be ‘low’. If Italy was the land of an extremely few rich individuals and masses of extremely poor subsistence farmers and slaves, and no significant middle class - as some primitivist authors seem to imply - then it would have made little sense for the glassblowers to relocate to Italy. The extremely rich could have paid ‘any’ sum irrespective of the transportation costs that would have been included in the final price, and the remaining individuals who were on a subsistence level (according to Hopkins 90%) would not have been capable of purchasing glass items at all, such that it would have made little sense to relocate to Italy or for the glass industry to have expanded. As such, the truth of the matter must be that Italy had a ‘general’ economic boom, meaning that the standard of living was increasing, and the middle class was sufficiently plentiful. This is supported by the fact that to “judge from excavated finds, glass vessels became widely accessible to all levels of society during Tiberius’s reign (A.D. 14-37). The physician Scribonius Largo, active in the time of Claudius (41-54), mentioned glass containers for medicines as a matter of course. Small bottles for scented oils, cosmetics, and medicines were among the earliest blown glass vessels. Tableware was a second area of early usage...The great Roman tradition of glass jugs, flasks, and decanters began before the middle of the first century.”573 This evidence is additionally supported by excavations of cities buried by Mt. Vesuvius showing that “glass vessels outnumbered thin-walled pottery by as many as two or three times, a proportion strongly suggesting that glass had largely replaced thin-walled pottery as common tableware.”574 The list of evidence can continue, but it nonetheless clearly shows an expanding glass industry, and a large range of customers. It is not clear how subsistence theoreticians want to explain how it was
possible in a subsistence economy where 90% of the masses lived on subsistence levels, that glass, which peasants could not and did not produced in-house, was competing with wood and clay tableware. However, since seemingly few (or none) of these types of scholars actually discuss the glass industry, it is only possible to conjecture; nonetheless, it is evident that the glass industry could not have developed to this degree in a subsistence economy.

It is should be clear by now that from seeing opportunities for profit in Italy, individuals working in the glass industry relocated to Italy, for example: “Attracted by the magnet of good commissions available in Rome, many Sidonian [(Syrian)] glassblowers migrated to Italy and set up shop in Rome, Campania, and Aquileia. Numerous glass skyphos-handles stamped with the names of Sidonians bear witness to their presence in Rome and other sites in the western Mediterranean.”

The only circumstances that would have made this relocation possible would have been the presence of a larger number of wealthier customers in comparison to those locally, in Syria. The other option would have been that the raw materials and additional labour in Italy were better and cheaper than those locally. However, if Italy had a higher standard of living, additional labour could not have been cheaper. As for raw materials, even though particular parts of Italy certainly had good raw materials, they were not necessarily better than those found in Syria/Palestine. In order to expand upon this idea it has to be clear that in “antiquity, glassmaking and glassworking were two separate crafts. The division into primary workshops for making the material and secondary workshops for working and shaping the glass had important consequences for the structure of the Roman glass industry…A recent analysis of Roman glass from different areas and different centuries concludes that the chemical composition is so uniform that the same source of sand must have been used to make the glass. If this conclusion is correct, primary glassmaking was probably still concentrated within a very few areas.”

“Pliny (HN 36.190) mentions as primary glassmaking areas the Syro-Palestinian coast…as well as Campania, Spain and Gaul…Strabo (16.758) mentions Egypt…The hypothesis that glass was made only in a small number of primary workshops in the Roman Imperial period is consistent with the fact that numerous remains of glass furnaces excavated in western Europe and Britain have all been identified as secondary workshops (where glass was shaped into objects).”

This signifies that irrespective of the location of a glassworking (glassblowing)
workshop, only very few regions supplied the raw materials empire-wide. Therefore, all glassworking that was not located in the same regions as glassmaking could not have relocated to those regions because of access to better raw materials: there had to have been other considerations involved. In the afore-mentioned case of the Sidon emigrants, it is understandable why they moved to Campania because that is where the raw materials were located, but why did they move to Rome or Aquiliea? Even though it is not mentioned, Aquiliea most probably also had some raw materials in the proximity; however, as for Rome, there is no related explanation. Rome certainly neighbours Campania, but there is still some distance. Another aspect to keep in mind is how did the emigrants know where the ideal raw materials were? Somebody must have gone ahead and tested conditions for glassmaking, which raises the question of why a glassmaker from Syria-Palestine would embark upon a voyage to Italy to look for ideal raw materials if the ideal raw materials were already located locally (there were no signs of exhaustion). The one and only answer must be that there was a drive for greater profit: an entrepreneurial spirit which led at first a few, and then eventually others to Italy in the search for better profit. The reason why Italy was chosen for an expansion into this industry can only be because there was a large market with a high demand for glass objects, and the purchasing power to backup that demand. This high demand and high purchasing power, especially considering the level of eventual glass production, could not have existed in a subsistence economy.

Once glassworking was established in Italy, it spread throughout most of Italy: “North Italy, Dalmatia, and the Ticino valley appear to have been at the forefront of glassblowing, but Campania was probably very active as well.” As already mentioned with Dalmatia, the industry also expanded into the other provinces so that during “the first-century glassblowing facilities began to spring up throughout the empire and beyond. Important first-century glassblowing sites include Avenches, Lyon, and Saintes, to just mention a few.” Before the reasons for the expansion of the industry are highlighted, there is one other aspect to consider: the technological improvement during the ‘Italian phase’.

Irrespective of the tradition of glassblowing in the east (particularly Syria-Palestine) “glassblowing was perfected in Italy. The range in quality and quantity of early brown glass excavated in Italy and western Europe far surpasses that from the eastern
Mediterranean with regard to variation in shapes, decorative techniques, and function.” This is important to note since until that point glassmaking had been a tradition in the East for centuries; however, it took its implementation in Italy for technological leaps to be made. According to Stern, “more than 100 years of experiments, discoveries, inventions, and improvements separate the first trial inflation of heat-softened glass from full fledged Roman glassblowing in the second half of the first century. Most tools and techniques now taken for granted as integral to the craft were invented during this period. The introduction of a novel type of glassworking furnace with a horizontal heat chamber, the construction of the iron blowpipe, the use of molten hot glass, and the pontil technique for fire-finishing the rim of a vessel, were the most important steps in the development of glassblowing. Most if not all these techniques were perfected in Italy.” Again, the question must be raised why significant technological leaps existed in Italy even though glassmaking had existed in the East for a significant amount of time prior to the expansion to Italy. This is particularly relevant considering that the quality of Roman glass was better than the glass produced in furnaces (which were similar to Roman furnaces) in Herat (Afghanistan), Damascus, Hebron and Cairo that were still functioning in the 1960s and 1970s. The answer can only be due to the strength of the market. As the demand for glass increased and the industry expanded, the ‘entrepreneurial’ character of the glassmakers/workers prevailed and various glassworkers must have begun experimenting in order to produce glass more quickly, cheaply, efficiently and to a better standard. It is clear that they succeeded by observing not only the technological leaps described here, but also from the sheer volume of glass that was created (as mentioned earlier). Furthermore, it is most probably possible that some technological advances were only feasible with some sort of capital inlay, which would have been attainable in a market like Italy’s. It is evident that the market for glass increased and diversified as a result of the existence of regions and workshops that only focused on particular glass products. For example: “Several workshops appear to have produced vexed glass and window panes, e.g., at Sentinum (Italy), Aix-en-Provence, Bet She’an, and—perhaps—at Sardis, but at other sites where glass vessels were made there is no indication of the production of flat glass. Glass beads and jewelry were almost always made in workshops that specialized in this particular aspect of glass production.” Furthermore, as already implied from the sheer amount of glass available, “Differences in quality, size, and workmanship are proof that Roman glass
vessels, like textiles, ranged the entire spectrum from expensive luxury items to the simplest of utilitarian goods...While some drinking cups were so inexpensive they could be bought ‘for a copper’ (Strabo 16.2.25), two particular glass drinking cups of moderate size sold for 6000 sesterces in the time of Nero”.

To recapitulate, below are some facts relating to the glass industry:

- The glass industry first expanded into Italy and then to the remaining Provinces in a time span of some 100-200 years.
- Significant technological leaps were made in Italy during the first 100 years.
- Glass products diversified significantly in types (jewellery, window panes, tableware, etc.)
- Glass products diversified in quality, size, and workmanship, allowing for the poorest people to purchase glass items.
- Total number of glass items increased dramatically during the time in question.

When these facts are viewed in combination with each other, it can only be a matter of fact that a market and a capitalistic system existed. It would be hard to understand how such an expansion, diversification, etc. could occur in a subsistence economy, unless the ruling classes ‘forced’ this to happen. However, there is no indication of such an occurrence, and as already mentioned, the glass industry seems to have been devoid of any significant number of slaves. The fact that the glass industry expanded the way that it did must have symbolised an increasing standard of living not only for Italy, but eventually for the Provinces as well. “The glass vessels available for sale came from an astonishing range of locations in the West and East, suggesting intensive commercial contacts ranging from north Italy to Gaul, Asia Minor, and Syro-Palestine.” Even though some glass objects eventually became cheap, the production of these would have only become economically viable for the glassmaker after technological improvements had been made because production of glass would have been more expensive prior to that moment. Although this line of thought has been largely hypothesized, other prevailing conditions within the Empire would have allowed for the expansion of the glass industry as well, and as such there can be no other reason that would explain the unfolding of these events.
However, as much as the glass industry appeared to diversify, expand, and specialise, it did not seem to reach the levels of industrialisation or centralisation attested for in early modern nations, or even reach the same levels that some other Roman industrial branches did. Unlike “other industries associated with fire (pottery, bronze, and metalworking), [it] did not develop into a large-scale enterprise in antiquity and the early Middle Ages, in spite of a formidable output. This was probably due entirely to physical restraints.”

Furthermore, “it is unrealistic to assume that ancient glassblowing was a large-scale industry comparable to the pottery industry—with hundreds of employees or even slaves labouring in one establishment.”

Apart from a few exceptional regions (possibly the glassmaking areas), the glass industry tended not to be very centralised. Instead of large factories being formed with hundreds of employees in a single area, the glass industry expanded with workshops popping up in local places. This is not to claim that glass products were only locally made or locally available: the example of Ennion shows that glass “vessels showing his mold-blown signature in Greek…have been found throughout the Mediterranean from Israel to Spain as well as on the north coast of the Black Sea. The notably wide distribution of his products is a measure of his success, not only as a glassblower but also as a businessman who was either familiar with all the intricacies of long distance trade or else knew how to find the right partner(s) for this venture.”

This is also not to claim that there was no degree of centralisation or no business partnerships within the glass industry – as the case with Ennion shows - because it has been attested for that these existed (e.g. the Sidonians who migrated to Rome). It has also been attested for that business partnerships were made not only with merchants (in order to extend the range of products sold, and/or to obtain raw glass), but also with industries that used glass as a storage medium. For example, “pharmacies and drugstores sold glass vessels that they filled with herbs and scents…Epigraphical evidence indicates that in Pompei glassworking and the sale of frankincense were concentrated in the same part of the city.”

Even though the main reasons for decentralisation will be explained in a subsequent section, it should suffice to understand that although the Roman glass industry was advanced, clearly capitalistic in nature, capable of forming partnerships and to a certain extent centralised, it did not appear to reach the levels attained in early modern Europe - at least those commencing from 16th/17th centuries.
One reason for the Roman industry’s inability to achieve early modern European levels which will be explored is the fact that there was a significant downturn in the glass industry commencing in the 2nd century A.D., initiated by the decline in Italy. However, before this occurred, in “the West, the second half of the first century was by far the most prolific period in terms of quantity, variety of forms, and variety of functions of glass vessels. This has been demonstrated for Britain and the European continent. This may have also been true of Pontic cities, but comparable data are not readily accessible for that area.” Not only did initial Syro-Palestinian exports to Italy and the West slow down during this period, but there is also evidence suggesting that “glasses made in the West were exported to the East, not only to the coasts of the Black Sea where the Romans had a foothold but even to Syria and Palestine.” Interestingly enough, according to West, even though “competition with Italian and German factories increased…the factories of Sidon continued to export throughout the period”, which highly suggests that the Syro-Palestinian glass industry did not seem to have ‘suffered’ under the increasing competition because it probably differentiated its glass by making it more unique or exporting it to other areas. Whatever the case may be, the Syro-Palestinian coast would not have to have worried about this Italian (and to some extent Western) competition for long since the actual peak was yet to come for this region: “In Palestine and Syria as well as Egypt, the floruit of blown vessel glass was the late Roman and early Byzantine periods.” The best days for Eastern glass were only just arriving, and the reason for this was the West’s decline. According to Stern:

“Whereas the influx of technology and industry led to economic growth in Gaul and the northwest provinces of the empire, Italy at the end of the second century began to experience a depopulation and an economic crisis that affected all areas of life in the peninsula. In the archaeological record of north Italy the crisis is tangible even earlier, beginning in the second half of the second century. Problems for the glass industry may have begun earlier still. The decrease of vessel glass postdating the first century is now becoming increasingly obvious. Areas that were at the forefront of luxury production for conspicuous consumption in the mid-first century, producing not only for local markets but also for export, appear to have dropped out of business towards the end of the century…suggests that luxury tablewares were not readily available in the second century. Glass usage was dominated by plain but good quality glass plates, storage bottles, simple household unctionaria, and glass cinerary urns,
most of which were probably produced regionally. Finds from controlled excavations in northwest Italy suggests that in the third century relatively simple glass vessels were indicators of wealth.”  

As already explained by Stern, these facts can only be correct because Italy certainly did seem to encounter problems in the 2nd century A.D. Furthermore, even though certain glass products had become cheap by the mid-end of the 1st century A.D., the decline of Italy and the eventual decline of the West caused even the cheapest of vessels to become indicators of wealth. Considering that the technology could not have regressed (as there is no indication of this), there must have been a significant decrease in the purchasing power of the consumers because luxury glass items dropped out of business, and former ‘simple’ glass vessels which could have been bought for a few coppers became indicators of wealth. The only other explanation could be that there was a significant decrease in raw materials; however, this is never mentioned. As such, only a ‘serious’ drop in the standard of living and purchasing power in Italy, and to some extent in the West, must be to blame. That this did not affect the East is evident from the fact that the “most prolific period of glass production in the eastern Mediterranean was the late Roman period. Egypt, Palestine, Syria, Cyprus, Asia Minor, and the north Pontic cities all had flourishing glass industries, and those of Syria and Palestine experienced a prolonged period of growth. Glassware played an increasingly important role in the daily life of all levels of society, to such an extent that in the fourth century glass vessels all but ousted pottery for certain functions.”  

The explanation as to why only the west seemed to be affected and what precipitated this fall falls outside the scope of this paper; however, some reasons might already be apparent on account of various parts of this paper mentioning the decline of Italy. In essence, the west was far more economically ‘dependant’ and connected to Italy than the east was, since the east even before Rome ever conquered it already was sophisticated with ‘old’ and functioning trade routes. A last issue of note to mention before this section concludes is the ‘extensive’ glass export beyond the borders of the empire during the Principate. This export appears to have dispersed in all feasible directions, as evidence of glass exports exists in the south (the Sahara), Sudan, Meroe, the kingdom of Aksum and its port Adulis on the Red Sea, even as far as
China, Korea, and Japan\textsuperscript{601}, and furthermore, in “East Africa and India, Roman glass was a regular trade good, both as finished objects and raw glass”\textsuperscript{602}. One can only conjecture on the exact amounts and prices attainable, but there is no doubt that these reached a ‘significant’ sum which once more brings forth the conclusion that the economy could not have been running on a subsistence basis, as it is hard to explain how a subsistence economy would allow for such an extensive internal glass industry increase as well as an extensive external export increase to regions as far as Japan. Irrespective of the fact that problems appear to arise within Italy and the West in the 2\textsuperscript{nd} century A.D., there can only still be one explanation for whole phenomenon: the economic system of the Roman Empire must have been running on a capitalistic market basis.

**Construction**

To fully and equivocally describe the importance of Roman construction would go far beyond the tenets of this paper; however, it should be clear - even for a layman - how much emphasis the Romans put into this sector and how strong this particular part of the Roman industry was. Evidence of this still can be found in the former regions of the Roman Empire in our modern world, with many remnants of aqueducts, amphitheatres, libraries, markets, roads, and other structures still dotting the landscape. That such architectural ‘marvels’ could have only been achieved by a ‘sophisticated’ society should be self-evident, especially considering that such constructions are found nearly everywhere in the former Roman domains and that most of these constructions dealt either directly or indirectly with some sort of economic benefit. For example, as impressive as the great pyramids in Egypt are, what was their direct usage for the populace after their construction (beyond religious and political symbolism)? In contrast to this, the Roman aqueducts, colosseums, libraries, baths, roads, etc. were constructs actually meant for usage by the masses. This distinction has to be understood, for even though it might certainly be said that some Roman constructional achievements also took the form of monuments, at least these monuments had some kind of actual benefit to the populace. To that extent Zelener writes:

“The Romans either achieved gradual innovation or intensified the exploitation of certain technologies. Capital expenditure for infrastructural improvement never reached a comparable level before the Roman period or for many centuries thereafter.
Roman roads, bridges, aqueducts, drainage systems, dams, harbors, and canals all constituted new levels of economic investment. In this respect, the archaeological evidence could not be clearer. Although these projects cannot be considered technological innovations, the intensity of Roman civil engineering demonstrates an efficient use of both capital and labor, with consequent economic benefits. Roads and canals lowered transport costs and facilitated trade. Gradual evolution in ship design and construction techniques as well as advancements in navigation would have been no less instrumental to increased trade flow. Developments in distribution and reduced transport costs are prerequisites for increased division of labor and economies of scale.”

That such intensive capital expenditures intended for economic infrastructural improvements and for the benefit of the masses were possible in a subsistence economy is difficult to imagine, as it would have required significant amounts of capital and an awareness for the economic benefit such investments would ultimately bring (also why the Roman state would bother to construct anything for subsistence farmers which supposedly constituted 90% of the population is not clear). The answer therefore must lie beyond that of a subsistence economy: although only a small aspect of construction will be examined, it will prove this point and it will also show that the populace benefitted not only from the end product but also from the construction process itself.

**Roman Roads & Waterways**

The Roman roads and waterways are just one example of continuous construction being conducted both during the Republic and the Principate which displays not only Roman ingenuity, but also Roman attempts to further trade. Westermann writes that the “Roman emperors developed, extended and perfected the road system which their forefathers of the republic had competently begun in Italy and in the early provinces adjacent to Italy.”

Furthermore, Drexhage, Konen, and Ruffing write that until the 3rd century A.D. there was almost a constant construction of new roads, bridges, and harbours that was also coordinated together with the maintenance of previous construction, so that by that point the road system had some 80,000-100,000km of paved roads, and according to Wells, an unknown amount of extensive secondary roads. Kloft mentions that these Roman roads were in themselves an amazing achievement of Roman
technology, management and economy, and that the road-system is actually a monument to the precision, economy and the political organisation which the Principate was capable of.\textsuperscript{607} The truth of this is highlighted in an example by Wells who writes that up “to the eighteenth century the Alps were not again so accessible as they had been in the second [century A.D.].”\textsuperscript{608} This evidence, along with the remnants of some Roman roads and canals still visible today, should make clear just how important the road and water-transport system was for the Roman Empire.

\textbf{Roman Roads}

Interestingly enough there are some scholars who claim that the roads were built and maintained solely for military purposes: this is an unbelievable claim when the circumstances are examined. Even though costs would have varied over time and location, Drexhage, Konen, and Ruffing mention that for a Roman mile (1.48km) in the 1\textsuperscript{st} and 2\textsuperscript{nd} centuries A.D., on average - and not even for the entire road\textsuperscript{609} - would have cost around 500,000 \textit{sesterces}. For the repair of a mile, a sum of 100,000 \textit{sesterces} seemed to be the average.\textsuperscript{610} For the purposes of making a simple arithmetic example: if 400 years are given as the time needed to construct this road system (approx. 200 B.C – 200 A.D.) some 68-84 million \textit{sesterces} would have been required per year, at absolute minimum, for its construction and an additional amount for its maintenance. Judging from examples mentioned by Drexhage, Konen, and Ruffing\textsuperscript{611}, and additionally by van Sickle,\textsuperscript{612} it would seem that during the Principate Roman roads were regularly maintained and repaired until (and during) the reign of Hadrian, and that this was followed by a gap (relatively speaking) of some 50 years until Caracalla or Septimius Severus. This is not to imply that no roads were repaired during this lull, only that the regular maintenance which the emperors had conducted until then seemed to have ceased, such that Caracalla and/or Septimius Severus were forced to make repairs to parts of the road system which were in seemingly poor conditions.\textsuperscript{613} This means that at least until Hadrian, judging from van Sickle’s work on Spanish roads, regular repair on roads was conducted every 10-20 years per road.\textsuperscript{614} Furthermore, the construction and repair of Roman roads, coupled with the occasional bridge, must have, on average, cost in the proximity of around 100 million \textit{sesterces} per year. Even though the section on tax revenue and military spending will be discussed later, judging from Drexhage, Konen, and Ruffing’s estimations, the total state income at the end of Hadrian’s reign can be guesstimated to have been
around 900 million *sesterces*.\textsuperscript{615} This shows that if the state truly did construct and maintain the roads purely for military purposes, it would have cost it $\frac{1}{9}$th of its income, which is a tremendous amount, especially when one considers that the vast majority of the roads would not have actually been in use by the military because the military tended to be stationary and located on the borders. Wells captures the essence of this claim where he writes that a “system of roads had helped to give the commercial as to the political world an organic unity till then unapproached…The primary purposes were, no doubt, political and military, but all the roads served commerce…In the later developments economic considerations usually seem dominant. The finances of the state would not else have encouraged or even admitted new construction.”\textsuperscript{616} This means that even if some roads were primarily planned and created for usage by the military they were nonetheless used more frequently for trade, and as Wells mentions, many roads during the Principate were constructed purely for the purpose of commerce. It is therefore not clear why some scholars claim that the main purpose of the roads was for military usage. This assertion infers that the military alone used the roads; however, in actuality commerce in the longer run would have used the roads more, be it in the volume of goods transported, the amount of people travelling, or almost in any other form. Even Finley writes: “It is almost true that, the state apart, the peasantry were, within narrow limits, the chief beneficiaries of the Roman roads.”\textsuperscript{617} In order to contrast this, Lopez gives an example which puts an emphasis on the claim for the military case, where he writes that Roman roads “were planned and maintained not by merchants, but by soldiers and civil servants, who were chiefly concerned that administrative centres and points of strategic importance should be solidly linked by indestructible and reliable communications”\textsuperscript{618} On the one hand Lopez is correct because the state would have had an interest in the construction of roads so that it could better control and monitor activities on the thoroughfare; however, he is not correct in his assessment of roads being built and maintained by civil servants and the military, which leads into the next section.

It is clear that during the Principate both Roman road construction and road maintenance was predominantly financed and built by private individuals, and not by the state or the military. For example, Brunt writes that the “fact that major repairs on aqueducts and work on the Italian roads were let out on contracts suggests *a fortiori*
that the same procedure was followed for new constructions too.” This means that most certainly repairs, and construction too, as mentioned by MacMullen (“farm out contracts to expedite the procuring of materials and labor”) were conducted by contracted private individuals. Emphasizing the involvement of private enterprise further, road construction was predominantly financed by private individuals too, and not by the state. This is proven, for example, by evidence from van Sickle who mentions that the emperors were chief financiers behind most of the road maintenance and construction, and furthermore, Drexhage, Konen, and Ruffing provide more evidence when they mention that the repair of a 23.6km long stretch of the via Appia in 123 A.D. cost 1,726,100 HS, of which the emperor paid 1,157,000 HS and the adjacent landowners 569,100 HS. Beyond the fact that 33% of the repairs were paid by private landowners, the remaining 67% was paid by the emperor, from his own pocket, and not from the state coffers. This dual aspect of the emperor - as head of the state, but also as a private individual - will be explored and explained in greater depth in the tertiary sector section, but for now it has to be clear that the emperor’s coffers were strictly separated from the state’s coffers, so that if the emperor financed something, he did this as a private individual and not as the state. To that extent, Rostovtzeff writes that in general, the emperors actually took over road construction and maintenance from the state. As such, the 23.6km road repair was financed 100% by private individuals and furthermore, it was repaired 100% by private individuals through contracting. It is difficult to identify on exactly which instances the ‘military road’ theoreticians have based there somewhat specious claim that maintenance was performed by the military during the Principate, and furthermore, it is highly doubtful that the military was actually using the via Appia (connecting Rome to Brundisium) in 123 A.D. more than it was being used by commerce – that is, if the military was using it at all during that time, as military presence in Italy was almost negligible during that period. There are, however, two possibilities where the confusion with military involvement in roads may have arisen. Firstly, this is the fact that a significant number of surveyors and some architects used in road construction were actually military personnel, and secondly, that the military is actually found to have been involved in a variety of public works both as constructors and even as suppliers, but only from the reign of Marcus Aurelius onwards (and for that matter, initially for mostly fortifications). The reign of Marcus Aurelius falls at the very end of the time-span of this thesis and the signs of the decline are already very visible.
during this period; as such, using this period as a representative of the two previous centuries is not accurate. Additionally, the fact that the surveyors were actually military personnel (and possibly the architect too) is still not sufficient to prove intentional military involvement because 99% of the other personnel involved in the entire project would have been private individuals. As such, once more it has to be clear that the early Principate was a very ‘unique period’ because the initial impetus for road construction during the mid-Republic was most probably truly military in nature and it may well have been built by the military - the same can perhaps apply for the 3rd century A.D.; however, for the time period between these two stages, this did not apply. However, this is not to claim that the military never built anything during the two centuries of the early Principate, as it most probably did build some roads at the military borders or bridges during conquests (e.g. Dacia); however, exceptions do not make it a rule. It has to be clear that while the construction of roads logically has a combination of reasons (political, social, economic and even military), their usage and importance was ultimately far more focused on trade and commerce than on anything else.

As to the question of financing, the fact that the roads were predominantly privately financed and built by private contractors during the early Principate also does not suggest that the state was never involved. Firstly, in the unique duality of his position, the emperor was acutely aware of both the state’s needs and the needs of the economy, such that the roads that were financed by him would have had an equivalent purpose for the state; secondly, during the Republic and very early days of the Principate, the state was more involved in the road system than it was at a later point (logically, during the Republic when emperors did not exist, the state had full responsibilities) and possibly still occasionally financed some projects; thirdly, in order to build a paved road (or any other larger communal work) it was necessary to get clearance from the state because it would have involved building over lands belonging either to the state or to private individuals; fourthly, in many cases it was actually individual municipalities which fronted part of the bill - for example, the road for Beneventum where Hadrian financed two-thirds of the cost and the city financed the rest. As a side-note, the municipalities are to some extent part of the state and yet there are also independent, and furthermore, even if municipalities were expected to carry part of the costs it could never be for certain how they procured these funds:
sometimes they simply managed to find a rich donor, which makes money under these circumstances also come directly from a private source.\textsuperscript{628}

\textit{Roman Waterways}

Much of what has been explained about Roman roads also seems to have applied to the waterways. Much like for the roads, the emperors also appeared to have been the main supporters, planners, and financiers of the construction and clearance of waterways, although the role of the military in canal building appears to have been more predominant than it was in the private sector.\textsuperscript{629} Westermann writes that the Emperors “were responsible for great projects, sometimes for great accomplishments, in the development of inland waterways. In some cases these were designed to furnish artificial outlets for rivers which constantly silted at their natural mouths. In other places they were clearly designated to furnish complete transportation between distant places by water. Augustus, Nero and Trajan, insofar as information has come down from antiquity, showed the greatest interest in such projects.”\textsuperscript{630} Examples of actual constructions and clearances are mentioned by Wells: “Parallel with the extension of the imperial roads, and for commerce even more valuable, was the improvement of river navigation and the construction of canals to connect the main streams. As a result almost wholly of imperial enterprise there were in Hadrian’s Italy 2,500 km. of navigable rivers north of the Po to the east of the Apennines and as many to the west of that range. Under Augustus a canal had been built from Terracina to Rome; Drusus connected the Rhine with the North Sea and with the Zuyder Sea also; under Trajan the Rhine was connected with the Meuse and with Lake Flevo…Projects for connecting the Danube with the Rhine, the Saone with the Moselle and the Gulf of Ismid with the Euxine, to afford an alternative route to that by the Dardanelles, engaged the serious attention of the imperial engineers.”\textsuperscript{631} Even though these are merely examples, it should make clear the importance which Romans placed on their transportation system, be it over land or by river. In fact, even the law enactments for that purpose were very clear. For example, with respect to waterways and the contrast with early modern conditions, Wehle writes that under the law of the Roman Empire “waterways, when constituting or crossing international boundaries, were free to use by all nations within the Empire. Since 1815…there have been successive organized attempts, mostly unsuccessful, to revive and apply this principle of freedom of navigation of the Roman Law on the Rhine, the Danube, and elsewhere.”\textsuperscript{632}
Even though the advent of the European Union has finally come about (Wehle was writing in 1946), it is still important to remember that when considering both roads and waterways, the Roman Empire, as one large state, granted an ease of transport empire-wide which the same regions centuries later were incapable of achieving due to the their fractured nature. In other words there were fewer barriers to trade on the same rivers empire-wide than there most probably were in the same regions until the mid/end-20th century, and this accounts for roads as well. Furthermore, also much like for Roman roads, the construction, clearance and maintenance of waterways would have supplied the private sector with work, and the benefit of this work would be two-fold because the same private sector could then use the infrastructure later for commercial purposes. It remains unanswered how such a tremendous amount of road and waterway construction and maintenance during the Principate - conducted predominantly by private individuals and used predominantly by them for the purpose of commerce - can be allotted to a subsistence economy. The nature of the construction and maintenance that was undertaken is definitely a sign of a capitalistic market economy because the ‘masses’ were ultimately the beneficiaries of this system, which even Finley agrees upon in a previously mentioned quote.

‘Other’ Public Construction

Roman roads and Roman waterways are merely one small aspect of Roman ‘public’ construction; yet, as portrayed in the simple example which showed that if the state would have needed to pay all the costs for the construction of roads, it would have cost it at least some 1/9th of its income per year - without the costs for waterways. If other types of ‘public’ works that are directly related to economic benefits (trade) are added, such as harbours, lighthouses, marketplaces, etc., or that are indirectly related to economic benefits, such as aqueducts, amphitheatres, libraries, baths, etc., it becomes clear that the level of ‘public’ construction in the Roman Empire was vast, especially considering the large amount of ‘public’ works of such kind. It is impossible to guess the exact amounts that were involved, but the ensuing section will briefly outline just some examples of ‘public works’ which should make clear that vast amounts of money went into the financing of these works, and not only did the majority of the money come from the private sector, but it was also the private sector that benefited from both the construction process and the eventual usage.
Aqueducts & Sanitation

By commencing the analysis, aqueducts have to be mentioned because without these the high levels of urbanisation of the Roman Empire and the large populations of some cities would not have been possible. The exact number and/or total length of aqueducts built are unknown, but in a table depicting some ‘known’ aqueducts and their lengths, Chanson mentions some 30 aqueducts with a combined length of roughly 1,300km, with the longest being 132km located in Carthage. It is important to note that this list is in no respect complete, as many aqueducts which were known to have existed are missing. For example, the list mentions no British systems and yet Stephens writes that nearly all “British cities probably possessed an aqueduct supply. Evidence to support this hypothesis is lacking only at Ilchester, Water Newton, and Aldborough” As an interesting side note, the first curator of Rome’s water supply, Frontinus, actually stated something similar to what has been written previously with regard to Egyptian monuments, in that “he compared the achievements of the Romans in the field of water supply with the ‘idle pyramids of the Egyptians or the glorious but useless monuments of the Greeks”.

According to Kloft, the construction technology and planning that went into aqueducts was very sophisticated. For example, the aqueduct system which brought water to Cologne over a stretch of 80km had to be sloped the entire way at the same gradient to allow water to travel at 200 liters/second. Even though the channel was largely built underground it still required digging up approximately 250,000-300,000 cubic meters, which would have necessitated a significant amount of workers. The particular costs for this aqueduct are not mentioned; however, it will become clear that depending on their length, size, type of materials used, and location, aqueducts could have a tremendous range of costs. For example, Scheidel mentions an aqueduct built in 144-140 B.C which cost 180 million sestertii (which would be sufficient to feed 1-2 million Romans in a year). Another two aqueducts (aqua Claudia and Anio novus) built for the city of Rome during the reign of Claudius, cost 350 million sestertii. Even more examples are mentioned by Stephens which range from 2 million at Bordeaux, 3.3 million at Nicomedia, 8 million at Aspendos, 28 million at Troas in Asia Minor and 240-400 million at Lyon. The great disparity in costs makes any sort of average calculations nigh to impossible to make, but it is clear
that due to the large amount of cities and the fact that some aqueducts were very high cost and labour intensive, significant funding would have been required nonetheless: “Possession of an aqueduct will have been determined by the community’s ability to pay for one, or its luck in obtaining a benefactor willing to do so.” In fact, the Roman Empire seemed to have ‘so much’ water running into its cities, that some cities, like Rome, were capable of funnelling significant amounts towards private uses. Stephens mentions that at “Rome, 44 per cent…of total delivery of the aqueducts under Nerva was piped to domestic and commercial establishments.” Rome can naturally be viewed as an exception, but all evidence points to some of the wealthier cities also having significant amounts of water coursing through their cities. In order to illustrate this: in 100 A.D. Rome had some 300 gallons per head per day available, while in stark contrast, as late as 1835 London ‘only’ had 10.

In connection with the aqueducts and the water delivery system, according to Kloft the sewage systems were also very impressive, with the cloaca maxima in Rome being the most famous example. During the Principate many cities had similar canalisation systems and in combination with the toilets and the baths they display a cultural need and understanding for cleanliness. That this would have required a certain technical know-how need not even be mentioned. For contrasting purposes a quote by Smith should elucidate the sanitary conditions of the Roman Empire: “For a thousand years following the fall of the Roman Empire, 476 A.D., sanitary engineering, with other branches of science, suffered great degeneracy…The neglect of their [(Roman)] great system of drains was so complete during this period that some of them became filled up and the people actually forgot what they were for. In the eighteenth century the subject of sanitation was revived and again brought before the people.” This means once again that it was not until the 18\textsuperscript{th} century that the ‘same’ regions of the former Empire commenced along the path of sanitation that existed within the Roman Empire, showing once more the degree of ‘sophistication’ that existed during the Principate.

As to the financing, construction and maintenance of aqueducts and sanitation, the same was applicable to roads. The emperors were the primary financiers, and in second place stood the municipalities in combination with private donors, with possible occasional infusions from the state (also depending on the exact time in
question). The construction work was contracted out to *redemptors* who then hired the labourers, acquired the resources, and built their parts of the aqueduct (all private). The only open question is the maintenance of aqueducts. It appears, at least for Rome, that two gangs of slaves - some 700 - were responsible for this (however, the aqueducts’ architects and bureaucrats were free men). How much this slave maintenance principle applied to all the other aqueducts empire-wide is hard to guess, but most probably wherever slaves were predominant then they were used; however, in locations where there were fewer slaves then free men were most probably used.646 Furthermore, for some of the truly grand aqueduct projects it was also possible that the military assisted, but this was generally an exception.647 Naturally military surveyors, architects, or even engineers could be found working at some construction sights, but it has to be clear that they did this only as supervisors and even then they were paid ‘additionally’ for their work, just as if they were any other hired labour.648

**Other ‘Public’ Construction & Manpower**

It should be evident by now, apart from some minor differences, that ‘public’ construction functioned more or less along the same principles irrespective of what type of construction was being built. There is therefore little need to continue exploring all of the various types of public buildings and how they were financed and constructed; however, it should be clear that it was predominantly privately financed and predominantly privately built and ultimately used by private individuals for their subsequent economic benefit. That such public constructions required immense funding is clear from the previous examples and additionally, even bath-houses required significant funding - as evidenced for example, by private donations of 400,000 HS (*sestertii*) at Thagura and 300,000 HS at Mandeure. Furthermore, 200,000 HS each was bequeathed just for the maintenance of bath-houses at Comum and Altinum (how the financial maintenance functioned will be explained in the financial section).649 As such, it is striking that such immense funding was going into the construction of ‘public’ buildings meant for use by the masses, especially considering that the “Imperial building programmes often vastly exceeded most of those the Republic had attempted before.”650 What makes this fact even more interesting is that the state generally did not actually fund these projects, irrespective that the emperors were also the primary financiers: they did this primarily from their
own private coffers and not the state’s. Even if the emperor’s contributions were to be taken out of the equation, the amount of funding coming from the private sector was also immense in both size and scope: evidence abounds in all kinds of texts, inscriptions, etc. How subsistence theoreticians believe that such a large amount of donors existed with such a high amount of funds in a subsistence economy is not clear. As a contrast, the ‘Dark Ages’ can perhaps be used: the economy was most probably some form of a subsistence economy, and there is definitely absolutely no sign of anything even resembling what was occurring in the Roman Empire.

That such ‘public’ works benefited the populace during both the construction process and then later upon completion needs to be reiterated. Even though the exact amount of labour involved in such constructions is generally unknown (the same applies to the exact number and different types of public works which are also unknown), the few times that numbers are mentioned a sizeable amount is usually implicated. For example, Brunt mentions the “continuous employment of 30,000 men for eleven years, in the excavation of the Fucine Lake[(42-53 A.D.)] under Claudius.”651 Even though he considers this an exceptional amount, Thornton and Thornton mention that the harbour project at Ostia is considered to have been even more difficult, highly suggesting even larger numbers, and this particular project took 20 years (42-62 A.D.).652 This is not to infer that all public works were of such magnitudes, as Thornton and Thornton mention some 178 projects in Rome between 29 B.C. and 68 A.D. where the labour in work-units ranges from almost 0 to 1800 (however, it is not entirely clear how many labourers are involved in one ‘work-unit’).653
It is important to remember that the list of public works can hardly be complete, as it only seems to focus on what the emperors were directly responsible for in Rome and its surroundings, and it does not mention all of the other ‘public works’ donated by other private individuals (the graph also omits the Fucine Lake and Ostia). It does however show that public construction was not always constant and that it appeared to be almost negligible at some points (which should be no surprise). As an overview, Brunt mentions that “Most of the emperors were builders on a grand scale. Never was this more true than in the middle of the first century, with Claudius’ construction of the port of Ostia and the Aqua Claudia, the laying out of Nero’s Golden Palace and the rebuilding of much of the city after the great fire, and Vespasian’s Forum and Colosseum, which as Frank says, ‘must have given employment to thousands of workmen for many a year’, not to speak of the Capitoline temple with which we started. Domitian’s new palace perhaps almost vied in splendour with Nero’s. Trajan and Hadrian too were responsible for great buildings at Rome; thereafter some decline in public works may be discerned.” Interestingly enough, with regard to road construction Hadrian also seems to be the ‘last’ emperor who was focused on building and maintenance, and this fact shall become more important in a later section, for now it is important to know that irrespective of any lulls (at least until Hadrian) the Empire-wide public construction projects would have still supplied a significant
amount of jobs for labourers - both directly in construction and also in the supporting industries (stone, marble, cement, bricks, etc.). As an example, according to Drexhage, Konen, and Ruffing, estimates claim that some 100,000-150,000 city dwellers of Rome (if families are included) made their living off of the construction industry (equivalent to 10-15% of the entire population of Rome). 656

It is attested for by Brunt that the labourers who were directly involved in the construction of public works were predominantly free individuals and not slaves, and he mentions that irrespective of the emperor’s true motivations “the provision of employment was no less obvious as a motive.” 657 Furthermore, he mentions that according to Plutarch, “Pericles proposed his great building programme at Athens precisely in order that the people should have a share in the state’s revenue, provided that they would work…on Giglioni’s own view it betokens that to a Greek living under Roman rule the provision of employment actually appeared the most natural explanation for large expenditure on public buildings, at any rate when initiated by a politician who appealed to the populace.” 658 Even Finley is aware of this and mentions that “public works reveal certain nuances differentiating them from private enterprises…first, the element of piety, attracting free labour as private employment might not; second, the opportunity, recognized by some states, to provide supplementary income for its citizen-craftsmen; third, the absolute shortage of the requisite specialists outside a few atypical centres such as Athens and Rome. For this work, therefore, slaves appear to have been little used.” 659 As such, it has to be clear that ultimately, irrespective of the emperor’s true motivations and those of other private donors, the labourers on these projects were predominantly free, even though some “building contractors had permanent gangs of slaves, [but] these gangs…would not have sufficed in times of a building boom.” 660 Furthermore, as already explained in an earlier section on slave labour, the slaves who worked on these projects were probably paid for their work, making them no different from free labourers. As to the exact nature of free labourers, depending on where the public work was situated, they could have comprised of anyone: Finley summarizes it best when he writes: “Similarly in the cities where the men who were compelled to struggle for subsistence on wages, picking up odd jobs as porters, at the docks or in the building trades…were either these marginal figures or they were independent peasants and craftsmen happy to be able to add something to their regular, low earnings.” 661
As for the question of the contractors involved in the building, much like any typical contractor mentioned earlier, he/she “had to provide sureties and real securities for fulfilment of his obligations, no doubt because he would receive down payments in advance for the costs of the work to be done. These practices are well attested in municipalities both under the Republic and in the Principate.” Furthermore, Brunt claims that for extremely large projects, no contractor could have provided significant guarantees. This means that the contractors were probably only hired to take part of the project, for example, only one mile of an aqueduct, or road, etc., and similarly, only certain aspects of a project, for example, one contractor would be responsible for basic construction and another for ornamentation, etc. By using this method each contractor would then be held liable for only his/her part, and it would ultimately depend on the contractor to hire the necessary workforce.

All of the evidence that has been provided should make clear the vast extent to which public works employed labour, the capital intensive nature of the projects, and the copious amount of projects that were carried out. Furthermore, it should also be clear that it was predominantly private individuals who financed and conducted the work (with occasional military and state aid, and/or with more municipal involvement). Even Finley - one of the most cited primitivists - seems to be aware of this. How this evidence can support the existence of a subsistence economy is not clear, as it has more hallmarks of a capitalistic economy, especially when considering the fact that most of the projects ultimately had some sort of economically beneficial purpose for the populace - unlike projects of some other ancient cultures. As a last note, in order to add further to the expository aspect of construction, is the fact that in combination with the significant amount of public work that was undertaken, the private building sector also contributed to the erection of buildings. After all, it lay in the hands of someone to build all of the private houses, shops, etc., for the urban population, let alone all of the countryside villas. Judging from the remains, they must have been built by ‘professionals’ and not by local farmers. To that extent Brunt writes: “We also have to reckon with private building. Perhaps until Vespasian’s time the size and luxury of the mansions of the great continued to increase. The frequency of fires and the shoddy construction of the tenements in which the poor dwelt must have meant that insulae, houses and shops needed continuous renewal or repair. All this activity
must have reached an unparalleled peak after the great fire of Nero’s reign... Be this as it may, it cannot be doubted that an immense number of labourers were employed for private account down to the time of Vespasian. Even though Brunt is only referring to Rome, one can only imagine what the setup of the private building sector must have been in the provinces, where the true construction process only really began with the Principate and increased drastically through the first centuries. One aspect is certain: much like in any private construction sector - even when making an applicable comparison to early modern times - it must have been much larger than the public construction sector. That large fortunes could be made in this sector is known from the example of Crassus, whose business concept was very simple: he would purchase houses that had been burnt down by fire, rebuild them, and then either sell or rent them out. This is furthermore corroborated by Frier, who mentions that urban “insulae [(apartment building)] were considered an excellent, though risky, investment. Some hypothetical net profits (before expenses) for the subleasing of insulae by entrepreneurial middlemen...range from 20 per cent to 33 per cent per year.” Although Frier mentions that this profit depended on a range of factors, an interesting aspect to note is that he compares the conditions to the 19th century from a variety of angles, suggesting that the rental market - at least in Rome - was in some regard better (e.g. legally), but on the other hand also worse than that of the 19th century (in terms of profit margins). Even though the rental market is technically not a part of construction, it is still important to note this aspect as it explains a likely strong impetus for private house construction in the more urbanised and richer areas. Ultimately, it has to be clear that even in the field of private construction there was evidence of strong market forces at work which led to the creation of a dynamic private construction sector - it would otherwise be difficult to imagine how all of the numerous private villas, mansions, and apartment buildings came into existence.

**Roman Mining**

As mentioned in the three-sector hypothesis section, mining is located in the secondary sector because the authors who have compared the Roman Empire to early modern nations have placed it there. In truth (also mentioned in the 3-sector section) it should more likely be placed in the primary sector, at least the basic aspect of mining; however, the additional or later stages of mining such as smelting or crafting metal into different forms still belong in the secondary sector. However, since the
evidence for comparisons places mining in its entirety in the secondary sector, it will stay as such for the purpose of this paper. As a further reminder, the Roman money section has already mentioned in general terms how mining functioned, and it has already been stipulated that when dealing with the supply of precious metals (gold and silver in particular), there is little evidence that the Roman Empire had any difficulties in that regard until the late 2nd century A.D. This evidence stems primarily from the fact that some of the largest mines ‘suddenly’ ceased operation in the mid-late 2nd century A.D.; however, this section will aim to prove that even this would not have caused any problems in supply of precious metals until the 3rd century A.D., and as such it would not have caused ‘problems’ for the time-span of importance in this thesis. Additionally, it will also be shown that Roman mining achieved levels not attained until the Industrial Revolution, which once more lends credence to the sophistication and economic strength of the Roman Empire.

Ownership, Financing & Labour

Roman mining, much like other industries in the Roman Empire during the Principate, was predominantly privately run and privately owned. There is however some confusion regarding both of these aspects, in particular with the role of slavery and convicted labour in terms of the labour aspect of mining, and with the role of the Emperor with regard to the ownership of mines. In terms of labour, most of the mention of vast numbers of slave miners actually seems to come from the time of the Republic. An example of this relates to the silver mines of Carthago Nova (Cartagena, Spain), where some 40,000 miners worked (with a yield of 25,000 drachmas daily) and the labour was predominantly conducted by slaves. Much as the previous section on agriculture explains, this phenomenon is generally attributed to the Republic, and during the Principate it is highly doubtful if slaves were the predominant workforce, even in the mines. Remaining with the example of Spain in order to show the contrast, according to Rostovtzeff, during the Principate the workers for the mines in Baetica (southern Spain) and Lusitania (Portugal and small parts of Spain) came predominantly from the local population. A far more detailed and in-depth quote comes from Edmondson, who writes: “Mining is a labour-intensive operation and so considerable attention has to be paid to the labour supply…in the early Principate peoples were transported some distance to work in mines. Furthermore, it is often claimed that slaves formed a substantial part of the labour
force, especially in large state-controlled mining districts; but their role can be, and perhaps has been, exaggerated. In Spanish mines there seems rather to have been a mixed work-force of slave, freed and free, while a labour contract from the Dacian gold mines clearly concerns a freeborn, indigenous, if illiterate worker. In addition, the presence of convict labour (damnati ad metalla) has to be admitted”. In essence, it has to be clear, much as for other areas where slavery used to be the predominant force during the Republic, that there is evidently a significant increase in the amount of free labour later during the Principate, even though exact numbers are not known. Additionally, in the quote Edmondson focuses on ‘state-controlled’ mines, while for private mines he writes, “mining on a smaller scale was more clearly integrated into the existing, agriculturally based, economic pattern of the area…landowners had a ready source of labour in their agricultural workers (whether slaves or coloni), who could be used in smaller-scale mining in slack periods of the agricultural year.”

This signifies that the smaller scale mines used whatever labour was ‘typical’ and ‘normal’ for the area, therefore, as already proven in the slavery section (and as the example for southern Spain by Rostovtzeff shows), slavery during the Principate was not the predominant form of labour in any province. This proves that in general during the Principate, slaves were not the predominant force in mining, irrespective of the fact that it might have been the one area where they could actually still be found in ‘large’ numbers.

The second issue deals with the ownership of mines, and the evidence shows that private ownership was predominant during the Principate. There is, however, confusion regarding the emperor: too many authors equate the ownership of the emperor with that of the state. This particular aspect will be explained in a later section in more detail, but for now it should suffice to understand that the emperor’s private property did not equal state property. Too many authors tend to equate the private ownership of the emperor with that of the state, which is not the case. An example of this confusion can be evidenced from Edmondson, who writes that under “the Principate mining did not consist solely of state-run districts. For although the Emperor came to own many, if not most, gold and silver mines, he did not necessarily own them all. *A fortiori* there will have been yet more privately owned tin, copper and iron mines.” This aspect of the imperial ownership of mines is also attested for by Drexhage, Konen, and Ruffing who mention that imperial property was constituted
by various mines. The gold and silver mines were of particular interest and they gradually became the ownership of the ‘state’ (in essence, actually of the emperor) and they delivered the necessary metals for coin production. There were also other mines in the hands of the emperor, for example the lead and tin mines in Britain.\textsuperscript{673} If this misunderstanding of the emperor’s role is corrected, it becomes clear that mines, of which many were owned by the emperor, were therefore actually in private hands. Furthermore, with respect to the remainder of mines, it is clear that they were in private hands – which De Martino mentions with regard to Spain as well.\textsuperscript{674} A large number of ‘smaller’ mines were in private hands because according to Roman law, whatever lay beneath the land of an owner, belonged to the owner, so any minerals or ores could therefore be mined by the owner of the land. Furthermore, no third persons were allowed to either dig or to even conduct examinations of the land without clearance from the owner.\textsuperscript{675} Additionally, it was “often only landowners who could afford the capital investment needed to either exploit mineral resources on their own estates or to lease a contract to operate shafts in imperially owned mining districts.”\textsuperscript{676}

The last aspect of the quote mentions lease contracts for the operation of shafts: this is yet another area where private enterprise is attested for. According to Dreghage, Konen, and Ruffing, irrespective of who the actual owner was, the exploitation of the mines could be leased out or they could be mined directly by workers employed by the owner - either forms are attested for (or a combination between the two).\textsuperscript{677} An example of this comes from an imperial mine of “the Metallum Vipascense in Lusitania. The two inscriptions relating to it show that it was controlled by a procurator and that payments by the lessees of the shafts, and fines for the non-observance of the regulations, were paid to the Fiscus ([the emperor’s private coffer]). The system by which the shafts were leased individually to contractors is the same as that found in the Dacian mines.”\textsuperscript{678} As such, even in the so-called ‘state mines’ (even though imperial mines are not state mines) there is evidence of private enterprise actually exploiting the mine, once more displaying the private nature of the mining enterprise of the Roman Empire. This is however, not to claim that the state owned no mines, or that the state did not have any interest in mining, as already mentioned in the money section, this was definitely not the case. An example of state-owned mines is mentioned by Boulakia, who mentions that during the Principate public mines “previously controlled by the censors and operated by the publicans [(corporations)],
came under the direction of the *ager publicus* [(the state)] administration.”

Another example that deals not so much with ownership, but with state control, is mentioned by Edmondson, who writes: “Another hint of central control may be discerned in Rome’s imposition of something akin to quote restrictions on the mining of British lead in the first century A.D. Roman mining in Gaul and especially Spain had commenced well before that in Britain, and so possibly the measure was designed to encourage mining regions where the necessary organization of production had already taken place. Furthermore, output was possibly lessened at the Rio Tinto mines in the later second century A.D. to allow more effort in the gold fields of the north-west, while the Dolaucothi gold mines seem to have declined as soon as the Dacian gold mines came into the Roman sphere of exploitation under Trajan.”

Whatever the exact role of the state in mining may have been, its main concern was most probably to focus on monitoring and to steer the amount of mined metals into a direction that was deemed best for its economy - especially precious metals and the relation between silver and gold. Yet, irrespective of this general ‘supervision’ of the larger mining areas, it was still predominantly private individuals who owned the mines, private individuals who worked in them, and private individuals who financed the projects. To that extent, Wilson even mentions the existence of mining business partnerships (*societates*), and corporations (*societates publicanorum*). Both types will be explained in further detail in later sections, but for now it should suffice to know that both were definitely private enterprises, and even though the corporations would lose their mining ‘contracts’ during the early Principate, they existed nonetheless and they were very active.

In terms of financing, mining - much like construction - required extensive funding, especially the larger mines. How subsistence scholars want to explain that a large amount of private individuals in a subsistence economy would have the necessary capital to actually pay for all of the costs involved is not clear. To that extent Edmondson writes: “Substantial investment of capital was needed to prospect for, extract and process mineral deposits. The landed aristocracy were those most likely to have had the necessary capital to invest in mining contracts or to start up small mining operations on their own estates, if these were blessed with mineral resources…Thus mining can only flourish in a given area, if the local economy in general is in a relatively stable and prosperous state. If there are general economic
problems, caused, for example, by warfare or brigandage, this is likely to lead to a decline in mining productivity." It is clear from the quote that private individuals appeared to supply the capital, irrespective of the fact that the term landed ‘aristocracy’ is misleading because the Roman Empire had no ‘nobility’ in the feudal sense. As this paper has already mentioned, the wealthy landowners could be senators, equestrian, freedmen, or theoretically even slaves (if it was contained within the peculium), etc. An example of the large capital requirements for ‘only’ one aspect of a mine is attested for by Wilson, who writes: “Pliny…describes the prodigious efforts of workers at the Spanish mines to construct huge industrial aqueducts over difficult and mountainous terrain, bridging gorges and crevasses and cutting through rock ridges, to supply water to huge hushing tanks above the opencast. The scale of capital investment this represents is colossal, and Pliny stresses the enormous expense involved. From the 1970s onward, work on Roman mining in the Iberian peninsula has corroborated much of his description and shown that it is no exaggeration.”

As a final note, beyond the colossal financing that was needed, the amount of labour in mining must have also been extensive. If only the mines of Carthago Nova employed around 40,000 men, it follows that all of the mines in the Empire must have employed at least, if not several hundred thousand labourers. To that extent, much like for any other economic aspect, there is evidence of a division of labour. This is evidenced by Wilson who mentions the administration of a lead imperial mine as an example: “The mines were administered, under the Empire by procurators. A procurator managed all lead mines in one or two provinces, and had a sub-procurator, a secretary (commentariensis), an accountant (tabularius ex ratione), a cashier (arcarius), an intendent (dispensator, viciproctor). Usually the procurators managed everything, but sometimes they gave monopolies on some of the operations to farmers-general, conductores.” For the ‘lower’ levels he mentions that in “Roman mines the workers were called metalici or metallarii. Some of them, the scaurarii, specialized in the treatment of ores; others, the flatores, in cupellation and metallurgy.” The list could theoretically continue, but it should be sufficient to demonstrate that the ‘general’ aspects of other industries were evident in mining as well. Additionally, it is also evident that the workers were paid a salary through monetary means – which has already been mentioned in the ‘Wage Work’ section.
Mining Technology & Output

On account of the tremendous capital expenditures in mining, and a wish for greater profits, Roman mining technology most probably achieved significant levels of sophistication. In fact, according to Wilson, “the Romans went further and mechanized practically every stage of the processes of prospection, extraction, and primary ore-processing. Indeed, Roman mining, particularly in the gold and silver mines of the Iberian peninsula, saw some of the most advanced and large-scale applications of technology to economically critical work ever to be practiced before the European industrial revolution, and some of the most impressive investment in infrastructural engineering works.” Furthermore, he also claims that the “Romans seem to have been the first to develop techniques of hydraulic mining, namely hushing and ground sluicing”. In particular, when examining the various uses of water: the erosive power of water, water-power in ore-crushing, water-power in making jets of water over washing tables for sorting of pulverized ore, etc., he writes that these “are applications of what must count, for any period up to the Industrial Revolution, as advanced technology, and they were applied on a truly industrial scale; operation on this scale was not attempted again until the nineteenth century.” This particular aspect regarding the fact that capital expenditures and technology of such magnitude were not conducted until the 19th century is further proven because “many Roman mines owe their discovery merely to the fact that they were reopened and reworked in the nineteenth and twentieth centuries.” In essence, this means that it was only in the 19th and 20th centuries that the same mines were capable of being mined again because the capital and technology had ‘finally’ surpassed Roman levels. How a supposed subsistence economy would have been capable of having sufficient capital for enterprises of this scale and of achieving such high levels is not at all clear, especially considering that the whole process was predominantly financed and worked by private individuals. In fact, there is no difference whether the state or private individuals provided finance for the mining, because the state would have received its money from the private sector through taxes, meaning that such ‘colossal’ amounts of capital must have been circulating in the economy. As such, it difficult to provide a sound explanation of how a subsistence economy could provide this capital: the answer once more must lead to the conclusion that it was a capitalist market economy. Furthermore, the ‘supposed’ weaknesses of Roman mining and any attempts to
disprove its sophistication by primitivists, is refuted in Greene’s work titled “Technological Innovation and Economic Progress in the Ancient World: M. I. Finely Re-Considered”. As the title suggests, he primarily examines Finley’s misgivings about any technological sophistication and convincingly disproves any lack of sophistication. It is not required to summarize the entire work; however, as an example that makes reference to the earlier cited usage of water-power, Greene writes that “Finley was quite wrong to assert that there was a ‘failure of effective invention’ in mine drainage in the north-western provinces of the Roman empire…remains found in those few Roman mines that have escaped destruction by later exploitation reveal a range of pumps and waterwheels that allowed effective mining some 200 metres below the water table. The supposedly ‘unattested’ chain pump was the machine of choice for deep wells at Pompeii, where the water table was 25 metres below the surface, but in mines it was normal to place simpler waterwheels or Archimedan screws in series, each making a short lift. Finley did not even mentioned the productive use of water over long distances to storage dams. It could then be used to erode deposits (ruina montium), or released in a rush for ‘hushing’ open-cast workings. Water also fed ore-washing tables, and even, it is argued by some, ore-crushing stamp-mills.” An interesting side-note with regard to mining technology, is that Finley is actually one of the ‘primitivists’ who believes the most ‘strongly’ in technological advances, for example he writes: “and one can point to some technological progress precisely where slavery showed its most brutal and oppressive face, in the Spanish mines.” This gives even further credence and proof to the aspect of mining technology, because even Finley - who does actually believe that some sophistication did exist - underestimates the true nature of Roman mining nonetheless. Finally, even Finley correctly remarks that slavery did not impede technology, which a large number of articles attempt to claim (this discussion would fall outside the scope of this paper).

Now that the high levels of advancement in Roman mining have been proven, it now remains to discover what the actual output of the mines was. The Roman money section has already discussed the output of a few mines, and it is clear that the output was tremendous. However, since a mine-by-mine output examination falls outside the scope of this paper, and it would also be nigh to impossible to carry out because very little information has remained, modern technology has nonetheless found a way to
calculate output by examining Greenland’s ice cores as an indicator of atmospheric smelting pollution from silver, lead, and copper.\textsuperscript{693} The exact scientific nature of this need not be examined in detail, but it is sufficient to note that this method of calculating output has cropped up in numerous articles, lending great credence to its accuracy. The conclusion is that during the Roman period, in particular in the 1\textsuperscript{st} and 2\textsuperscript{nd} centuries A.D., there is evidence of output “on a scale unparalleled again until the nineteenth century.”\textsuperscript{694} Therefore, as a conclusion to this section, it is clear that both technology and the actual output during the Principate attained levels not achieved until the 19\textsuperscript{th} century, and that these levels could only be achieved through tremendous amounts of manpower and capital. It should therefore be clear that something of the sort, within a Roman context, is only achievable in a capitalistic market economy and not in a subsistence economy. As a side-note, a centrally-planned economy might have also been capable of such an achievement, but as the mines were predominantly privately financed, privately administered, and privately mined, it is clear that it was not a centrally-planned economy.

**Output of precious metals in 2\textsuperscript{nd}/3\textsuperscript{rd} century A.D.**

The last section deals with the decline of mining in the mid-late 2\textsuperscript{nd} century and its possible repercussions. Many articles have written about the decline of mining in the Roman Empire; for example, Michell writes with regard to a longer time period: “Davies, in his Roman Mines in Europe, which is a most careful compilation of all extant evidence, comes to the same conclusion as to the exhaustion of the supply of precious metals, and suggests that the Eastern Empire with its capital in Constantinople was able to survive the eclipse of the west because it was still able to produce at least enough gold and silver to keep its currency on a sound footing.”\textsuperscript{695} This supposed ‘exhaustion’ has often been cited as one of the reasons for the decline of the Roman Empire, but it will be the purpose of this section to show that there actually does not seem to have been an actual ‘exhaustion’ of the mines as such, but more of socio-economic shift as a result of market forces which led to a decline in mining.

In the first instance, it has to be clear that mining never truly ceased, regardless of the fact that some authors seem to imply the contrary. This is best explained by
Edmondson, who writes: “The conclusion to be drawn from the archaeological evidence is traditional, but seems consistent: namely that the apogee of large-scale mining of gold, silver and tin in the Iberian peninsula occurred during the first and second centuries A.D. Thereafter the mines do not seem to have operated on quite the same scale; there was a decline in production. But what is often overlooked is that the mines did not go out of production altogether. There is evidence, no matter how scant, that at most of the larger sites some mining still took place in the later Empire, if only on a much reduced scale…Under the Principate a mixture of large- and small-scale mines had prevailed; but during the later Empire large mines as such were no longer feasible and so small-scale mining came to form the dominant mode of production.”  

This clearly gives evidence that the mines were not exhausted as some authors believe, and furthermore, it has to be remembered that scholars mostly focus on the largest mines and little work has investigated small mines. Direct evidence of some mines still being worked in after the 2nd century is known, for example “in western Bosnia numismatic evidence suggests that iron, lead and copper were exploited in the third and fourth centuries, while in eastern Bosnia the argentiferous lead mines of the Drina valley have provided epigraphic evidence of their continue operation in the later third century. Thus Dalmatia is one area where mining (possibly including gold mining) continued into the later Roman Empire.”

This quote shows that mining was generally not exhausted and that it continued, but perhaps not on the scale on which it did in the past; as such, the answer to this conundrum must lie in another direction.

As it is clear that exhaustion was not the problem, the answer must lie in socio-economic factors. To that extent, mining in Spain, which is incidentally the area on which most authors base their exhaustion theories, will be crucial in explaining the situation. In particular, in approximately the period from 170-180 A.D. there is evidence of some of the largest mines (e.g. Rio Tinto, northern Spanish gold mines, etc.) ‘suddenly’ ceasing their production, making it confusing because evidence suggests that the deposits were not exhausted. Four possible theories related to socio-economic events should clarify the issue, especially when taken in conjunction with each other. The first deals with profitability issues. As already mentioned in the technology and output section, it was not until the 19th-20th centuries that the large mines left by the Romans were mined again. This suggests that further extensive
exploitation of the mines required even better technology or more capital than the Romans were capable off, or that they deemed was profitable. This ‘idea’ of mine profitability is echoed by a Roman historian named Strabo (64 B.C. – 24 A.D.) who “reports that the gold mines of Cisalpine Gaul were in his day not being worked on the same scale as previously, because mines of Transalpine Gaul and Iberia were more profitable.” To that extent, perhaps those mines that were ‘suddenly’ abandoned were deemed unprofitable irrespective of whether they were exhausted or not. The second theory, at least for Spain, deals with foreign incursions. In essence, there were a series of Moorish invasions into Spain around 171 A.D., and Wilson writes that there “seems a strong likelihood that the Rio Tinto workings were disrupted during these incursions”. The evidence for this likelihood is strong, considering that the invasions correspond to the exact time period of the cessation of mining. The third theory deals with the value relation between gold and silver (which has been explained profusely in the ‘Money’ section) and that it is possible that some mines were shut down in order to maintain whatever relative value the state required between the two precious metals. Even though silver appreciated in terms of gold, it could have been government policy to do exactly that; however, the real examination of this third theory will be left open for now as it is peculiar that silver mines were generally shut down and gold mines were still worked, even though there seems to have been sufficient gold and insufficient silver with respect to demand. The fourth theory, and incidentally the ‘strongest’ theory which in many ways will also explain the previous theories (except for the gold/silver ratio), is that in 165 A.D. a powerful plague struck the Roman Empire which would last until 180 A.D. According to Zelener, the “identification between smallpox and the Antonine plague, using both biological and historical arguments, and the construction of an epidemiological model for smallpox suggests that the Roman Empire may have lost approximately 25% of its population in the decades following the first outbreak.” 25% is a tremendous amount, easily accounting for several million people - irrespective of which scholar is cited for figures of the overall population. That such a tremendous loss of life would have heavily impacted not only mining, but the entire economy will be highlighted in a later section – nonetheless, it largely explains a lot of aspects of Roman mining. It is clear, that irrespective of the exact death toll, a plague which killed several million inhabitants, coupled with military invasions, would have significantly changed the socio-economic dimension of the economy. As
such, why there is a shift in mining in Spain (which was being invaded), and why there is a cessation of mining in some other parts (lack of manpower and most probably lack of capital) should be clear. The years in which all of the circumstances took place coincide too much for this a decline in mining to have been an ‘accident’, which makes it evident that Roman mining initially declined largely to external forces, and not to internal weaknesses or exhaustion; furthermore, it is questionable to what extent ‘new’ metals were required since such a large part of demand had ceased to be as a result of human loss.
Roman Tertiary Sector

Introduction

The Roman tertiary sector is given a peculiar status in a large variety of scholarly works with regard to the Roman Empire. For the most part, scholars do not mention this sector and they mainly focus on the first two. It is not clear why this is done, as the tertiary sector is probably the most diversified sector of all, and it includes some extremely important aspects that are relevant to any economy. These are the military, the state, trade and banking. It is not so much the case that no scholars have ever discussed these issues; however, they often do not seem to place much importance on it. For example, if 90% of the population work in agriculture, then scholars most often place 5% in industry and 5% in services. It is therefore the purpose in this section to highlight the value of the tertiary sector and to show that it was not negligible but that it was in fact significant.

State & Military & Bureaucracy

Roman Military

The Roman military was most probably one of history’s first professional armies, or at least history’s first professional army of such size and longevity (approx. three centuries). During the Principate, the legions and auxiliary comprised some 300,000-400,000 men (depending on the exact time, as it was enlarged) consisting mainly of volunteers that would spend a good part of their lives in the military service (16-25 years depending on the type). As such, the cost of maintaining such an army constituted a very large part of state expenditure, and yet the Roman state was more than capable of this task during the time-span relevant to this thesis. Besides regular pay, and the potential for additional income during wars, military service was attractive because upon completion of service individuals would attain Roman citizenship and receive a retirement bounty. The aspect of attaining roman citizenship made service ultimately more attractive for provincials, which is attested insofar that by 100 A.D. no, or very few, Italians seem to have been employed in the army (initially the army was fully Italian). Beyond these basic issues, what makes the military even more important from an economic perspective is that the military was
actually a strong force for trade, be it as a means to safeguard trade by providing ‘peace’ and ‘security’ (the *Pax Romana*), or as an actual consumer of a large variety of products, thereby stimulating the market through an increased demand which in turn caused an increase in production and trade. It is precisely this economic role which shall briefly be outlined, in order to show how the military affected the economy and how the mechanisms correspond more closely to those of a capitalistic market economy than to those of a subsistence economy.

**Economy of the Military**

To commence the outline, it has to be clear that the military was paid via monetary means. Even though a lot of information has been lost in general with regard to salaries within the various trades of the Roman Empire, the precise salaries for the military are actually known. The following two tables, taken from Speidel, depict the pay of the various ranks in the Roman army in *sestertii* per year. The first table (Table 6) corresponds to the various types of armies and pay-grades according to rank, and the second (Table 7) depicts the pay-grades for those between the lowest rank and the rank of a centurion, in essence: “The Roman army had a great many ranks and functions below the centurionate but perhaps only three different pay grades: basic, pay-and-a-half (*sesquiplicarius*), and double pay (*duplicarius*).”

Table 6:
<table>
<thead>
<tr>
<th>Rank/Unit</th>
<th>Augustus</th>
<th>Domitian (A.D. 84)</th>
<th>Severus (A.D. 197)</th>
<th>Caracalla (A.D. 212)</th>
<th>Max. Thrax (A.D. 235)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEGIONS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>miles legionis</td>
<td>900</td>
<td>1,200</td>
<td>2,400</td>
<td>3,600</td>
<td>7,200</td>
</tr>
<tr>
<td>eques legionis</td>
<td>1,050</td>
<td>1,400</td>
<td>2,800</td>
<td>4,200</td>
<td>8,400</td>
</tr>
<tr>
<td>centurio legionis</td>
<td>13,500</td>
<td>18,000</td>
<td>36,000</td>
<td>54,000</td>
<td>108,000</td>
</tr>
<tr>
<td>primus ordo</td>
<td>27,000</td>
<td>36,000</td>
<td>72,000</td>
<td>108,000</td>
<td>216,000</td>
</tr>
<tr>
<td>primus pilus</td>
<td>54,000</td>
<td>72,000</td>
<td>144,000</td>
<td>216,000</td>
<td>432,000</td>
</tr>
<tr>
<td><strong>AUXILIA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>miles cohortis</td>
<td>750</td>
<td>1,000</td>
<td>2,000</td>
<td>3,000</td>
<td>6,000</td>
</tr>
<tr>
<td>eques cohortis</td>
<td>900</td>
<td>1,200</td>
<td>2,400</td>
<td>3,600</td>
<td>7,200</td>
</tr>
<tr>
<td>eques alae</td>
<td>1,050</td>
<td>1,400</td>
<td>2,800</td>
<td>4,200</td>
<td>8,400</td>
</tr>
<tr>
<td>centurio cohortis</td>
<td>3,750</td>
<td>5,000</td>
<td>10,000</td>
<td>15,000</td>
<td>30,000</td>
</tr>
<tr>
<td>decurio cohortis</td>
<td>4,500</td>
<td>6,000</td>
<td>12,000</td>
<td>18,000</td>
<td>36,000</td>
</tr>
<tr>
<td>decurio alae</td>
<td>5,250</td>
<td>7,000</td>
<td>14,000</td>
<td>21,000</td>
<td>42,000</td>
</tr>
<tr>
<td><strong>HORSEGUARDS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eques singularis Aug.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>decurio eq. sing. Aug.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The bold figures are based on direct documentary or literary evidence.

Table 7:

<table>
<thead>
<tr>
<th>Branch</th>
<th>Rank</th>
<th>Before A.D. 84</th>
<th>After A.D. 84</th>
<th>Severus A.D. 197</th>
<th>Caracalla A.D. 212</th>
<th>Max. Thrax A.D. 235</th>
</tr>
</thead>
<tbody>
<tr>
<td>miles</td>
<td>basic</td>
<td>750</td>
<td>1000</td>
<td>2000</td>
<td>3000</td>
<td>6000</td>
</tr>
<tr>
<td></td>
<td>sesquiplicarius</td>
<td>1125</td>
<td>1500</td>
<td>3000</td>
<td>4500</td>
<td>9000</td>
</tr>
<tr>
<td></td>
<td>duplicarius</td>
<td>1500</td>
<td>2000</td>
<td>4000</td>
<td>6000</td>
<td>12000</td>
</tr>
<tr>
<td>eques</td>
<td>basic</td>
<td>900</td>
<td>1200</td>
<td>2400</td>
<td>3600</td>
<td>7200</td>
</tr>
<tr>
<td></td>
<td>sesquiplicarius</td>
<td>1350</td>
<td>1800</td>
<td>3600</td>
<td>5400</td>
<td>10800</td>
</tr>
<tr>
<td></td>
<td>duplicarius</td>
<td>1800</td>
<td>2400</td>
<td>4800</td>
<td>7200</td>
<td>14400</td>
</tr>
<tr>
<td>miles</td>
<td>basic</td>
<td>900</td>
<td>1200</td>
<td>2400</td>
<td>3600</td>
<td>7200</td>
</tr>
<tr>
<td>legions</td>
<td>sesquiplicarius</td>
<td>1350</td>
<td>1800</td>
<td>3600</td>
<td>5400</td>
<td>10800</td>
</tr>
<tr>
<td></td>
<td>duplicarius</td>
<td>1800</td>
<td>2400</td>
<td>4800</td>
<td>7200</td>
<td>14400</td>
</tr>
<tr>
<td>eques</td>
<td>basic</td>
<td>1050</td>
<td>1400</td>
<td>2800</td>
<td>4200</td>
<td>8400</td>
</tr>
<tr>
<td>legions</td>
<td>sesquiplicarius</td>
<td>1575</td>
<td>2100</td>
<td>4200</td>
<td>6300</td>
<td>12600</td>
</tr>
<tr>
<td>or alae</td>
<td>basic</td>
<td>2100</td>
<td>2800</td>
<td>5600</td>
<td>8400</td>
<td>16800</td>
</tr>
</tbody>
</table>
As the tables show, the amount that each individual got paid is very clear and that it was through monetary means. Furthermore, there is a clear progression of increasing salaries through the decades. Even though inflation will be examined in a later section, the military wages will prove crucial to calculating inflation because they represent the one ‘constant’: irrespective of the year, the soldiers generally conducted the ‘same’ type of job under the ‘same’ conditions which implies that the raise must ultimately be attributed to inflation, which shall also become clearer in the ensuing parts of this thesis.

Besides the fact that the soldiers were paid via monetary means, the military supplies were also procured via monetary means - from the private sector. In essence, the state either purchased directly or hired private contractors to produce the needed goods and supply the military (at least until the 3rd century A.D.). An example of this is mentioned by De Martino, who cites Cicero explaining that Servilius Isauricus could have made a substantial profit from deliveries to the military but he did not (due to personal reasons). Furthermore, according to Kloft, the army was a very important economic factor in the regions in which it was stationed, and to the regions which supplied it. The regions it was stationed in benefited from an increased presence of an additional ‘population’ with significant monetary purchasing power, which aided in the creation of a local trade and a market. In fact, it is no surprise that in many places where the Roman military was stationed for extended periods, villages, towns, or even eventually cities came into existence. This is particularly noticeable in the north, the Balkans, and the Danube provinces. As for the regions supplying the military, the same is accounted for. In fact, ironically, this aspect is yet another reason for the decline of Italy. At the onset (mainly during the Republic), the ‘majority’ of the military was largely supplied by Italy, but then during the Principate (especially in the very early stages) the military had started covering its needs from the provinces. The main reason was that the large part of the military was ‘far’ away from Italy and Rome, and production in local areas would have cut transportation costs very significantly. As such, over time, the local areas started taking away the contracts from Italy due to lower cost (especially once the local areas were able to emulate Italian agricultural and industrial techniques). This aspect however, will be discussed in a later section, but it should be sufficient to understand that an army of some 300,000 to 400,000 would have required significant amounts of food and
equipment, and that the continual supply of this would have aided in a significant strengthening of trade and the creation of a market wherever the military was located, since the supply and transportation came from private sources.

An interesting side-aspect of the nature of the monetary system and of the organisation of private supply which the Roman military adhered to is that the soldiers actually purchased their equipment from their own salaries. An example is mentioned by Speidel regarding the military salaries:

“These figures, though, were but nominal sums from which several considerable deductions were made. As all full pay records show, a deduction of 1 per cent was made from each stipendium, even before it was accredited to the soldier. The nature of this deduction is obscure [(most probably a service-charge for bookkeeping or it was used in an institution or purpose benefiting all soldiers of the unit)]…The first-century pay records show that of the remaining 99 per cent (ex eis) 80 drachmae (= sesterii) of the stipendium before A.D. 84 (RMR 68) and 100 drachmae (RMR 69) thereafter were kept back for food (in victum). Standard stoppages, it appears, were also made for hay money (faenaria), boots and socks (caligas, fascias), which, together with the deduction for food, represented about 40 per cent of the basic stipendium of footsoldiers. Occasional stoppages were made for clothing (in vestimentis) and contributions towards the camp Saturnalia (saturnalicium kastrense) and the standards (ad signa). Altogether these deductions amounted to roughly three-quarters of the annual pay of the two auxiliary soldiers in RMR 68. The rest of the money was booked to the soldiers’ account (depositum), for which there must have been separate book-keeping.”

The fact that soldiers were required to pay for a large part of their supplies (which were privately procured), and that it was deducted from their salaries at the source (and noted accordingly), and that a soldier actually had a monetary deposit account with the military, are very strong indications of a monetary market economy and not of a subsistence economy - irrespective of the fact that the state was essentially financing the entire ordeal. Even within the military, there is evidence of market forces and exchanges at work amongst the soldiers, for example, Speidel mentions:

“On 25 August of that year [27 A.D] L. Caecilius Secundus, cavalryman of the ala Paulini, borrowed 600 drachmae (= sesterii) from C. Pompeius, a miles cohortis. He promised to pay back 200 drachmae with his next pay (stipendio proxumo), which
was due only nine days later (1 September)...his full stipendium was 350 sestertii, or after the 1 per cent deduction, 346.5 sestertii. If the standard sums for barley (64 sestertii = 16 denarii) and food (80 sestertii = 20 denarii) were deducted, Secundus was left with 202.5 sestertii, just enough to cover the interest of six obols on the 200 drachmae. At first glance it may seem hard to believe that Secundus was willing to dispose of the full sum he would receive on his next pay-day. However, since he needed another 400 drachmae, this becomes plausible. For these 400 drachmae he left as pledges a helmet, inlaid with silver, a silver-inlaid badge, and a scabbard adorned with ivory and silver."

Once again, it is not clear how such a military financing system could have existed in a subsistence economy. The army was a professional army: it contained in the range of 300,000-400,000 soldiers and even an additional 50,000-100,000 if the navy is included, and this for almost three centuries. The military pay was paid in monetary terms, as were the supplies which came from the private sector, and the army was required to pay from its own salaries the supplies that were yet to arrive. Wherever the military was stationed caused an improvement not only in trade, but in the creation of a market and eventually in the creation of urbanised localities (villages, towns, cities), and furthermore, it increased the local production of a whole variety of products in those areas. Additionally, there is no sign of either the state contributing towards supplies - at least until the 2nd century A.D. (which is still to be discussed) - or of the military taking supplies from the countryside (barring any wars or such like - which would have been an exception and not the rule; furthermore, if the military took from the countryside it would not explain the economic strengthening of the areas where the military was located). As such, it is not clear how such occurrences can be attributed to a subsistence economy? As a contrast, according to Strayer, regarding the 17th century:

“When war did come, finance and supply, command and recruitment were handled on an ad hoc basis. Some civil servants would be made treasurers for the war; others would be sent out to collect supplies. Great nobles…acted as generals; lesser nobles as company commanders. Theoretically all able-bodied men were liable for military service; actually the company commanders were responsible for recruiting their soldiers. As late as the seventeenth century a company (or a regiment) could be considered the property of its commander…It took centuries for European
governments to develop either Departments of War (and related organizations) or a really professional officer corps. Some remnants of the old methods persisted even into the nineteenth century. It is no coincidence that the high point of European imperialism was reached at exactly the time that the military activities became effectively institutionalized.”

In essence, this means that until the 18th-19th centuries the same regions of the former Roman Empire did not (and possibly could not) field professional armies, which once again raises the question of how the Roman Empire could have been a subsistence economy? This is especially true if the Roman Empire is for a moment omitted from the chronology of history: the primitivists have never proposed that any other subsistence nation was capable of fielding a professional army the size of the Roman army, and that it was able to maintain an army for such a long time, and that it had an entire salary and supply system based on monetary methods and private enterprise in combination with no ill effects to either the economy as a whole, or to the regions in which the military was located (at least until the mid-end of the 2nd century A.D.).

The only possible answer to the primitivist point of view is that they must have focused too much on either the mid-Republican times (before the Marian reforms, approx. 107 B.C., which essentially lay the basis for a professional army) or on the mid/end of the 2nd century continuing into the 3rd century A.D. Essentially, according to Speidel: “Stoppages appear to have been reduced perhaps as early as Hadrian’s reign, for this emperor is said to have reorganized the administration and the expenses of the army during his visit to the troops on the Rhine in A.D. 121…During the second half of the second century the emperors began the provision of free annona, and in the late seventies we even find that the Roman state had begun to pay annual contributions towards the cavalrymen’s expenditure on fodder. Although the evidence is admittedly scanty, we see a reduction of stoppages and the beginning of contributions towards expenses.” As such, during “the long period between A.D. 84 and 197, which seems to have seen no…pay-rises, it can be shown that the deductions from the soldiers’ pay were gradually reduced, and a system of ever-increasing government contributions developed. These changes were such that by the end of the third century A.D. they overshadowed the actual pay.” This means that if anybody would have focused on the Roman military commencing from the end of the 2nd century A.D. onwards, they would have noted that not only was the state
predominantly taking care of the military in kind, but that it was also producing the needed supplies itself and that it was not using the private sector. However, it has been revealed multiple times in this paper that this approach to examining the situation completely skips over the advances and sophistication that were achieved, and although the entire process of greater state support of the military generally falls outside the timeline of this thesis, the aspect of greater state intervention and economic problems from the time after Hadrian, is an aspect which should be kept in mind for later sections.

Military Costs

It should be evident by now that the military had a galvanizing effect on the economies of the regions where it was located, and on the regions which supplied it. Furthermore, it was also an excellent method of enhancing the monetary economy and monetizing the regions in which the army was located. Additionally, the fact that money was generally being pumped into the economy from the state through the military would also have had a positive effect due to the money multiplier aspect (i.e. it was better than the military being supplied in kind). This does not, however, mean that the maintenance of such a large military was always beneficial because the costs of such an enterprise were tremendous for the Roman state. To that effect, Hopkins estimates the costs in the first century (most probably before Domitian’s salary increase) to have been approximately 445 (+/- 50) million HS. These costs include pay for the legionaries, officers, auxiliary, a retirement bounty for 5,600 legionaries per year (set at 12,000 HS per person), praetorians, urban cohorts, transport, and navy. In contrast to this, in a far more extensive and detailed examination, Drexhage, Konen, and Ruffing have calculated a total expense of 500 million HS per year between 14 and 84 A.D (although it is questionable how much they accounted for the costs of the navy). Furthermore, they mention that there are still a lot of questions regarding various other expenses, such as donations (e.g. imperial donations under Tiberius were 160-180 million HS, under Claudius, 200 million HS, etc.) and materials which the military required, which can influence this figure, but it should be a close enough approximation. It is clear that there would have been a significant increase after 84 A.D. due to the increase in salaries; for example, the cost of just one fully equipped legion increased from approximately 6 million HS to approximately 8 million HS, while the cost for the fully equipped infantry cohort (cohors peditata)
increased from approx. 400,000 to 534,000, the *cohors equitata* from 530,000 to 706,000, and the *ala quingenaria* from 630,000 to 840,000 HS. However, the cost of 500 million HS before 83/84 A.D. will be sufficient in order to illustrate just how much of the state income this expenditure involved. According to Hopkins, the claim that several “ancient authors state that expenditure on the army constituted by far the largest item in the state budget”, is easily proven to be true. Citing Frank, Hopkins mentions that the state revenue in the reign of Augustus was at 450 million HS (according to interpretations of Plutarch, the Roman treasury’s income in 62 B.C. was 340 million HS per year). This would actually signify that the state was incapable of paying its military as early as during the reign of Augustus; however, there do not seem to have been any problems until after the reign of Hadrian, and as such, in the same passage, Hopkins does mention that Frank underestimated the income under the reign of Augustus. Hopkins calculates the income to have actually been around 800 million HS in the early first century A.D. Irrespective of the exact income of the state and of the military, it is clear - especially since the ancient authors claim it as well - that the military costs constituted a very large part of the state income. This also explains why a lot of public construction was being financed by the emperors and through private initiative, because the state would not have had the sufficient funds, especially considering that the military did not present the only cost the state had to cover for - there was still the question of paying for the bureaucracy, etc.

As such, even though the military costs made up such a large chunk of the state income, the economy of the Principate was capable of growing until the 2nd century A.D., and there was no indication of an inability to pay for these costs until the mid-2nd century. In combination with the earlier section, it is unclear how a subsistence economy could have been capable of such events, and furthermore, it also explains why the private sector and the private emperor were so important to the Roman economy since the Roman state was heavily bogged down with costs for the military. This aspect of private involvement and importance will play a larger role in the section to come.

**Roman Emperor and State**

Before the income and expenditure of the state is highlighted, it is finally time to explain just how and why during the Principate and the relevant time-span of this
thesis, the emperor’s treasury and his ownership was clearly separate from that of the state. Too many authors and scholars seem to have been unaware of this, and too often they view the state coffers and that of the emperor as one and the same. This confusion or lack of knowledge has significantly skewed a large plethora of information because it becomes unclear to later readers if it was actually the emperor or the state that financed projects (or received income for that matter). To that extent, this paper has attempted to clearly highlight the separation between the two each time; however, it is certainly possible that mistakes have been made resulting from the heavy amount of prior confusion with regard to this subject. However, in defence of all modern day scholars who have fallen into this ‘trap’, it appears as though the ancient Roman scholars themselves - especially those writing retroactively from the 3rd century A.D. - make the same mistakes, as the emperor’s coffers and state’s coffers did become more and more intertwined over time. Irrespective of this, for the time-span relevant to this thesis, there was a clear separation of the two treasuries both in terms of income and expenditure. As an additional side-note, it must also be clear, unlike some authors have claimed, that the Roman Empire did not have a ‘palace economy’, irrespective of the immense wealth of the emperor. The reason is very simple, the definition of palace economy reads: “A palace economy is a system of economic organisation in which wealth flows out from a central source (the ‘palace’), eventually reaching the common people, who have no other source of income.” As this paper has proven multiple times, the ‘common people’ most definitely had a large variety of options to attain income, i.e. the market, and as such by default, the Roman economy was not, nor did it have, a palace economy.

The Emperor’s fiscus and the state’s aerarium

The vast majority of the information that will be explained and explored within this section comes from two sources, since both sources only focus on precisely the difference between the state and the emperor’s coffers. Both sources are in general agreement with each other, and no other sources have actually been found to directly deny any of the information (indirect denial is implied in the belief that both coffers were the same, but none of the scholars of that belief actually ever attempt to prove that both coffers were the same, they seem to just assume that they were). The first is an article by Fergus Millar titled “The Fiscus in the first two centuries” and the second is a book by Michael Aplers titled “Das nachrepublikanische Finanzsystem: Fiscus
The emperor was indeed a private individual, and he was in possession of his own private wealth which was strictly separate from that of the state. The emperor’s private treasury was called the *fiscus Caesaris* (or *patrimonium Caesaris* as it was known initially\(^729\)) and it only held the emperor’s private money, which meant that no state taxes would flow into this treasury - irrespective of which provinces the taxes came from, even if the imperial provinces were in question. All taxes, from all of the provinces, still went into the one and only central state treasury called the *aerarium populi*.\(^730\) Furthermore, the distinction does not only apply to money, but to any forms of capital as well; for example, the emperor still owned his private lands, and the state possessed its ‘own’ public lands. Why this is not clear to various scholars, even to some of the authors writing in later Roman times, will be explained later; however, legally, there was a clear distinction between the two. Irrespective of his powers, the emperor could not legally use the *aerarium* as he wished, as the senate was in charge of the *aerarium*. However, Alpers, citing Seneca the younger (during the time of Nero), mentions that due to his position as the Princeps, the emperor theoretically had control over everything in the Roman Empire;\(^731\) nonetheless, the direct control which the emperors had over the *aerarium* still required the senate’s backing. It is precisely this aspect of the emperor - as a private individual, and at the same time as the Princeps of the state - which shows the dual nature of his status.

As such, if it is clear that the Emperor’s private wealth was called the *fiscus Caesaris* and that the state’s wealth was to be found in the *aerarium populi* why is there such confusion? The first confusion deals with the fact that the emperor could theoretically control the *aerarium* through his own powers and by influencing the senate: it should be clear that this aspect is not very different for a modern day president or premier. Ultimately, if the emperor ‘makes’ the *aerarium* pay for some expenditure then the state is paying for it, and if the money comes from the *fiscus*, it is the private wealth of the Emperor. This has to be very clear because even Roman scholars by the 3rd century A.D. appear to be confused by this. An example of this is Cassius Dio (c.a. 155 or 164 to after 229 A.D.), writing a history book about the life of Augustus, appears unable to distinguish if it was actually Augustus who paid for the construction
of certain roads or if it was the state. According to Alpers, in the Severan times the emperor directly controlled all of the financial means and he was therefore in possession of all financial means. However, it is important to remember that this is not the case for Augustan times. For example, Tributa and vectigilia for sure did not go into the emperor’s private treasury. Furthermore, just as much as this paper has repeatedly mentioned, Alpers also convincingly proves and makes reference to a large variety of moments when Augustus clearly paid some expenditure out of his own pocket, and to those when payment was conducted by the state. In further reference to Dio, and the 3rd century in contrast to the 1st, Millar writes: “Moreover, even it, as is likely, the lines of distinction between Imperial and public funds drawn here come to require some modification, it must be recognized that the distinction between them did not survive throughout the entire period with which we are concerned. For Dio, writing in the years between 210 and 220, distinguishes clearly between [them]…A passage in his account of Augustus, which is often quoted as proof that the distinction had vanished, shows in fact that it remained (for he writes in the present tense) and that it was the complexity of the working relations of the two funds which made it difficult for a historian, reading his sources, to tell from which money had been drawn on a particular occasion.” As such, even though over time the distinction between the two coffers became blurry, they were legally still two separate entities.

The second possible line of confusion deals with the actual term fiscus Caesaris, as it was not the only fiscus in existence. There were others by the name of fisci provinciarum, which were essentially provincial ‘coffers’ located in each province. For example, there was a fiscus Asiaticus located in Asia, a fiscus Alexandrinus located in Egypt (most probably referring to Egypt and not only the city), etc. These fisci provinciarum, irrespective of the common term of fiscus, were not part of the emperor’s wealth. The fisci provinciarum belonged to the aerarium and the administrators of these took care of expenditure and income regarding the provinces for the state, and not for the emperor. Essentially, after gathering the taxes and making deductions for expenditure, each province would then send the remainder to Rome which would then land in the public coffers (aerarium). In the most basic form, this was the purpose for the existence of the fisci provinciarum (i.e. provincial coffers) in the provinces. The reason for confusion arises from the common term
of *fiscus* because some historic sources only mention provincial taxes going into the ‘*fiscus*’ without specifying which one, which has possibly led some authors to understand that provincial taxes went into the emperor’s coffers. This aspect is only further exacerbated by the fact that some provinces were under the direct control of the emperor (the imperial provinces), while others were under the control of the Senate (i.e. the state). Within the provinces that were under direct imperial control, the emperor’s financial procurators (and staff) were in charge of administering both the emperor’s private wealth and the state’s wealth. However, it is important to remember that even though the ‘same’ person (or staff) was in charge of the administration for both pools of money, the procurator (or staff) still had to clearly distinguish between the two. As such, the taxes still went first into the *fiscus provenciarum* and then later to the *aerarium*, while the emperor’s private income from his lands, business, etc. went into the *fiscus Caesaris*. As for the procurators in the senatorial provinces, they were only in charge of the emperor’s private wealth.\textsuperscript{739}

The fact that the procurators in the imperial provinces were responsible for both the state’s and the emperor’s private coffers has possibly led to misunderstandings; essentially, both types of monies would have been supervised and administered by the same person, but it has to be clear that this does not change the fact that the procurator still had to clearly distinguish between what money went where. As a side-note, the fact that procurators were located in every province, even if they were not imperial provinces, allowed the emperor to be implicitly aware of the financial conditions of the entire empire. Augustus published the *brevarium totius imperii* which showed an overview of all the military and financial resources of the empire, and it gave the emperor an overview of the financial situation of the empire in case there was a need to quickly respond to any issue that may have arised. Later, Tiberius had decided to keep this information hidden, but Caligula once again opened it to the public. What happened after this period to the publishing of these financial overviews is unclear.\textsuperscript{740}

As a side-note, if any of these total financial overviews of the Empire had remained into modernity, it would have significantly made the examination of the economy of the Roman Empire much easier.

The third confusion is possibly the strongest of the three, since it deals with ‘changes’ in the system, where the lines between the two became blurry over time as the emperor gained more powers over the state coffers. This process was slow and
gradual, and in fact, Alpers examines the process in this book in great detail. However, due to the limits of this paper, this cannot be summarized in full, but a very brief and general outlook will be given.

- During the reign of Tiberius no great change was made from the time of Augustus, other than for two minor aspects. The *fiscus Caesaris* was still called *patrimonium* and the clear distinction between *patrimonium* and *aerarium* still existed.\(^741\) The two minor differences were that Tiberius took the ‘liberty’ of managing to convince the senate to grant him the wealth of a recently executed traitor named Sejan, and to gain part of the inheritance of another traitor named Silius. According to Roman law, the wealth of ‘traitors’, the *bona damnatorum*, was intended for the *aerarium* but Tiberius managed to legally convince the senate that Sejan had only made his wealth as a result of the emperor’s aid, and as such that part of his wealth belonged to the emperor.\(^742\) The same reasoning was applied to the case of Silius regarding Silius’s inheritance, even though Silius was not a traitor (for specific reasons Silius’s inheritance was going to go into state coffers).\(^743\) These occurrences are important to remember as they would later set a precedent, irrespective of the fact that Tiberius achieved his results legally.

- During Caligula’s reign the clear distinction between the state and private treasury starts to get blurrier. At the beginning of his reign he did everything according to the law. In fact he re-commenced the publishing of the state expenditures (*brevarium totius imperii*), which Tiberius had ceased doing in 26 A.D. (when he left Rome). Even though it was not required legally, Augustus had been doing this to bring more visibility into state affairs. However, towards the later part of his reign Caligula did not seem to focus on this clear distinction anymore. This is not to say that the clear division disappeared, the *aerarium* still received taxes just like it was supposed to, and the *fiscus Caesaris* contained the emperor’s private wealth.\(^744\) The main difference is that the precedents set by Tiberius were ‘re-enacted’ by Caligula, and apparently, in a much shorter time (Tiberius had needed 1 year). However, much like Tiberius, Caligula carried this out legally, first by taking part of the wealth of the exiled Flaccus into his own *fiscus* (calling it *bona*
Flacci), and then by having the remainder declared *bona damnatorum* which legally went to the *aerarium*.\(^{745}\) An additional change, however, occurred when in 39 A.D., Caligula took the entire fortunes of former centurions without getting a *senatus consultum* (senatorial decree: approval) for it, and placed it in his *fiscus*.\(^{746}\)

- During the reign of Claudius there were even further reforms, this time with regard to the power of the procurators. The emperor’s procurators were given the power to make decisions and exercise jurisdiction, and it was not only the procurators that managed the imperial provinces, but also the imperial procurators in the provinces of the senate.\(^{747}\) By granting magistrative powers to the procurators in 53 A.D., there was obviously a trend to lower the obvious distinctions which had existed earlier between the emperor’s and state’s spheres of management/power.\(^{748}\) Claudius also managed to gain informal and personal control over the praetorian *aerarii*, which had until then been supervised by the state, and furthermore, he also created a special committee in charge of administration for the collection of debts towards the *aerarium*.\(^{749}\) In general, it was a clear attempt to control more of what had been originally been the state’s sphere, but the *fiscus* and the *aerarium* legally still remained distinctly separate under Claudius, and even though he had made various reforms.\(^{750}\)

- Nero, much like his predecessor, had influence over the *aerarium*. There were three ways to influence the state treasury. Firstly, he could influence the people in charge of managing the treasury, for example, in 56 A.D. he took away the administrative powers of the *quaestor*’s and granted them to the prefects - chosen by him. Then in 62 A.D., he created a commission that would supervise the *vectigalia publica* (basically the supervision of all monies entering into the *aerarium*). The emperor, furthermore, had also the ability to enact laws through edicts, just like he had the ability to get senatorial decrees so that he could have influence over the state treasury. For example, he did make an edict that regulated various questions regarding state taxation and therefore the income of the *aerarium*.\(^{751}\) The main repercussion of this edict
was that the state treasury became somewhat dependent on him by subventions. In 62 A.D., Nero commenced by giving the state a sum of sixty million sestertii on an annual basis. However, irrespective of these ‘additional’ changes, there was still legally a clear distinction between the emperor’s private wealth and the state’s wealth, and this system would survive the period of the four-emperors.

After the Roman civil war Vespasian had the task of sanitizing the state’s financial resources. Vespasian used this moment to cement and strengthen the emperor’s influence on the state treasury. This makes sense as it was his task to remedy the situation, and as such it was logical that he would be granted direct access to perhaps not all, but the most important, aspects of the state’s finances. For example, for the first time the emperor’s procurators are seen to be controlling the fiscus Asiaticus, fiscus Alexandrinus and the fiscus Iudaicus. The emperor, through his procurators, was able to control freely over the monies of the richest senatorial and imperial provinces without the aerarium’s supervisory and management officials being involved. The Princeps, and the procurators whom it anointed, were granted these powers which were taken from the senate. In essence, this was done to save the state from the financial ruin it was facing. This does not mean that the legal distinction had disappeared, as the provincial treasuries still constituted a part of the aerarium Populi, and the new procurators still had to book the money with regard to the state treasury; however, Vespasian was now legally capable of having direct access to the financial resources. Another aspect of imperial control was Vespasian’s attempt to get more money by selling the subseciva (public unassigned land) and placing the proceeds into his fiscus. Even though during Vespasian’s reign it is clear that the emperor had far more control than ever before, the two treasuries were still separate, and furthermore, considering that the Roman state stood at the edge of ‘economic collapse’, such extreme measures make sense. At the beginning of his reign Vespasian noted that around 40 billion sesterces were needed in order to sanitize the state (easily more than 40-50 years worth of state income under the best conditions, which obviously were not existent anymore). That Vespasian eventually succeeded irrespective of some ‘ruthless’ actions, is a testament to the strength
of the Roman economic system, and furthermore, it is also not true that Vespasian was only ‘taking’ from the private sector as it is also evidenced that he cancelled some long-standing debts owed to the aerarium.\footnote{758}

- Domitian’s reign proved generally very similar to Vespasians. As such, even during Domitian, there was still a distinction between the two treasuries,\footnote{759} irrespective of the imperial control over both aspects. There were, however, some slight differences. On the one hand the situation worsened for some because Domitian collected a variety of inheritances: it seems as though it was only necessary that a spokesperson for the deceased came forth to claim that the emperor be named the heir of their fortune. By applying a lot of pressure that was bordering on legality, Domitian was able to gather various fortunes into his fiscus.\footnote{760} On the other hand, the situation improved because Domitian stopped the subsciva process initiated by Vespasian, and introduced an edict which donated the land to those people that had been using it anyway.\footnote{761}

- It is evident that until the reign of Domitian there was a gradual increase of imperial control over the aerarium and the state (the distinction between the two was still largely clear), but this process would experience a reversal under Nerva. For the first part, Nerva returned the fortunes that Domitian had taken without ‘due reason’ from the fiscus, at least those that were still within the fiscus.\footnote{762} Nerva also changed various other policies initiated by Domitian; for example, letting the income accruing from the water tax go to the aerarium, which is where it should have gone, as opposed to going into the fiscus which was practiced under the reign of Domitian.\footnote{763} A much more important process was also initiated by Nerva and later followed by Trajan: the lessening of the powers that imperial administrators had over state income. For example, according to a senatorial decree of 53 A.D., imperial procurators were given the power to mediate in conflicts between imperial (fiscus) and private interests. This system obviously caused a conflict of interest as the imperial procurators could hardly be objective. As such, Nerva created an additional administration (tribunal) which was responsible for this in order to grant more impartiality to litigations between private individuals and the fiscus.\footnote{764}
During the reign of Trajan the reversal process that had been initiated by Nerva was continued. This is easily evidenced as the *fiscus* started losing court cases regarding conflicts with private individuals, which according to Pliny did not seem to occur under the reign of Domitian. Furthermore, during Vespasian’s and Domitian’s reign, where acquittal of some form of ‘criminal’ deeds through bribes to the *fiscus* was possible, it was removed by Trajan. More importantly, Trajan also attempted to stop both *bona damnatorum* (wealth of those accused of treason) and *bona caduca* (wealth of inheritances with no legality) from going to the *fiscus*, and he wanted both to go to the *aerarium*, the way that it was under Augustus. This act was also coupled with changing the laws regarding who could be charged with treason, as allegations of high treason were severely overused by his predecessors. In general, although Trajan did not exactly bring the entire administrative system back to its origins as it was under Augustus, he clearly attempted to give back some of the control and state income which had fallen into imperial hands, back into state hands. As such, it is clear that the difference between the *fiscus* and the *aerarium* still existed and that a large part of the grey area between the two resulting from the measures taken by previous emperors was being cleaned up.

Under the reign of Hadrian the general processes commenced by Nerva/Trajan seems to have continued. An example is the increasing volume of litigation the *fiscus* became engaged with, along with the appearance of the post of *advocatus fisci* “instituted by Hadrian. A *privates* [(private individual)] could, but the *res publica* (or any part of it) could not, litigate and engage an *advocatus*. The post was salaried and its occupants were not permitted to represent private persons, other than their close relations or *pupilli*, against the Fiscus. An *advocatus fisci* might be concerned with a particular area of Italy or the provinces, with a single *tractus* of Imperial property, or with a certain type of Imperial revenue.” In essence, Nerva and Trajan had created the ‘court’ responsible for such questions, and Hadrian took it one step further and created a host of lawyers for this court. Another example of Hadrian’s
attempts is that he noted “that most governors had been in the habit of selling panniculāria (the personal effects of executed prisoners) and turning over the proceeds to the Fiscus…Hadrian (according to the Historia Augusta) went further in attempting to cut down the Fiscus’ claims and announced that henceforward bona damnatorum would go solely to the Aerarium.”\textsuperscript{770} As a general rule the distinction between the aerarium and fiscus was still very clear, and much like Trajan, Hadrian was making an effort to clarify the distinction further.

- Unlike their predecessors, the ensuing reigns appeared to be largely void of great detail with respect to the status of the aerarium and the fiscus. It is not entirely clear why this was so; however, it could be connected with the ensuing difficulties the Empire was experiencing during the late 2\textsuperscript{nd} century A.D. which continued into its decline in the ensuing centuries. There were most probably far more important things to write about than the role of the fiscus and the aerarium. In general however, the little information that is mentioned deals with the increasing role of the emperors in state affairs, and the distinction between the aerarium and the fiscus becomes blurred once again. For example, it is mentioned that bona damnatorum, irrespective of the efforts made by Trajan and Hadrian to direct the money to the aerarium much like as it had been under Augustus, went back into the fiscus by clearance of ensuing Emperors.\textsuperscript{771} In connection with this, the “right of the Fiscus to all bona caduca was first proclaimed by Caracalla.”\textsuperscript{772} Other examples of fines and dues switching from the aerarium and entering into the fiscus are generally attested to have commenced in the mid-second century (after the reign of Hadrian) and to have continued into the ensuing centuries.\textsuperscript{773}

As a conclusion, it should be clear that the emperor’s private wealth and the state’s public wealth was clearly separate for the time-period in question, irrespective that from Tiberius until Domitian there was a movement towards combining both administrations and control under the emperor - a process which was to some extent reversed from Nerva through to Hadrian. However, even during the ‘strongest’ imperial control over both the aerarium and fiscus under Domitian, there was still a clear difference between the two, making it clear that the emperor’s belongings were
not the state’s belongings (and vice versa). As such, it should be clear that when the emperor donated or paid for something he was doing this as a ‘private’ individual and not as the state. Naturally, as head of state the emperor also had certain powers and knowledge of the financial status of the empire, which gave him the opportunity to work instead of the state; however, this does not change the fact that he was a private individual as well. This dual aspect will have to be kept in mind for a later section regarding the Roman state bank. A last note of interest is the fact that after Hadrian the process was once more reversed so that the emperor could exercise more control, such that by the 3rd and ensuing centuries A.D., the emperor and the state truly become so intertwined that it is hard to differentiate between the two; however, this falls outside the timeline of this thesis.

**Roman State Income & Expenditure**

This section will highlight the Roman state’s income and expenditures, especially since it should now be sufficiently clear that they were separate from that of the emperor; however, even as the Princeps, the emperor had significant powers over the state. As mentioned in previous sections, taxes were paid in money, and both the military and bureaucracy received their salaries via monetary means. In large part on account of this, according to Kloft, the early Principate was the most important time in the period of Roman history for monetary penetration. Additionally, it has to be remembered that state taxes were not automatically municipal taxes. To a large extent each municipality was also responsible for its own needs so that all of the various municipalities might have had some forms of ‘additional’ taxes, dues, duties, that will not be enumerated here. It simply falls outside the scope of this thesis to try to discern all of the possible ways in which the municipalities managed to get funding for their projects and to pay their expenditures, as it would most probably involve a case-by-case study. This is not to claim that it was not in the state’s interests to keep abreast of news relating to its municipalities. The state most definitely was interested in aiding the municipalities, as the case of Trajan shows, who sends Pliny to Bithynia in order to improve the finances of the municipalities located in that region. The intent here is to purely focus on income and expenditure directly related to the *aerarium*, i.e. focus on the Roman state. This means that all of the aspects mentioned here are in truth only one part of entire ‘state’ involvement, but to a certain extent some aspect can also relate to the various municipalities. For example, the Roman
state would collect and use dues from the rental of market stalls in the city of Rome, much like a random city in the empire would collect and use rental fees for a market stall in that particular city. As a concluding remark, Drexhage, Konen, and Ruffing write that it should be clear that the Roman Empire managed to maintain a balance between income and expenditure for a very long time and that it was able to maintain stability. Even the civil war of 68-69 AD, which certainly caused problems, was solved. Although difficult periods arose along the way, in general until the end of the 2nd century and beginning of the 3rd A.D., the empire was more than capable of maintaining a balance.\textsuperscript{776}

\section*{State Income}

The following is an example of a list of the known, and the larger, types of state income:

1. The most basic and regular source of income for the state was income from public land. Public land (\textit{ager publicus}) was usually leased out to private individuals for a specific amount of time and for a specific amount of money, and it was called the \textit{vectigalia}.\textsuperscript{777} In fact some types of public property were not actually leased out; instead their usage required a fee. Examples of the lease and usage type of public land are: temples, shops, market stalls, baths, toilets, bridges, roads, etc.\textsuperscript{778} There are also examples of types of public land that could be used for purposes of cultivation, like pasture fields, woods, etc., the payment for these was called \textit{scriptura}. This also included various enterprises like pitch manufacture, mines, salt manufacture, etc. Lakes and rivers for fish farms were also possible as public land and could be leased out. Naturally the state could also opt to actually sell any part of public property and not only lease it.\textsuperscript{779} The only slightly confusing aspect is that Beigel agrees with what has been mentioned for the lease or usage of public land, but mentions that all of it was called \textit{vectigal}, which could perhaps signify that the name of \textit{scriptura} was phased out after the Republic (especially since the state still leased out land during the Principate). Furthermore, Beigel also mentions that on the public land which was cultivated there was a tax in kind, corresponding to the type of produce (similar to what was explained under the \textit{lex Hadriana} in the agricultural section).\textsuperscript{780} It is, however, important to
remember that the vast predominant part of income from public land would still have been in money.

2. The second most basic income was a tax called the *tributum*, which initially (during the Republic) had been a tax for extraordinary purposes like wars or similar occurrences, and it was a tax on all private property, irrespective if it was land, cash, and slaves.\(^7\) During the Principate, this was then split into the *tributum soli* and the *tributum capitis*, where the first was a land tax partially paid with money or in kind, and the second was a poll tax initially initiated by Augustus in Egypt, but then later also levied in the provinces. Inhabitants with the Roman citizenship were exempt from the poll tax and from the land tax insofar that the land was in Italy or in a privileged city in the provinces. As can be expected, there was an exact knowledge of the land ownership structure and of the population of the empire (which has sadly been lost by modernity).\(^8\) The provincial census was conducted in the provinces at various, but regular, intervals. Any change in ownership of land, and even of mobile property such as slaves, cattle, etc. had to be promptly disclosed to the local authorities, including the death of a tax payer. The range of the land and of the head tax was different in every province, where the tax for the head tax actually varied not only between each province, but also in the regions and even within cities and rural areas in a province.\(^9\) Some scholars conjecture that since this tax was not levied on Italy, it meant that Rome and Italy were ‘living’ off the provinces and that this impoverished the provinces. However, ironically, as this paper has shown and proven numerous times, the provinces actually experienced an economic improvement, while it was actually Italy which went into an eventual decline. The conclusion of this is that although this tax only forced the provinces to pay, it did not detract from their economic growth.

3. Augustus created the inheritance tax (*vicesima hereditatis*), which was set at 5% and later under Caracalla increased to 10%. It was paid by all Roman citizens, with the exception of blood relatives and those whose inheritance fell below a certain threshold (100,000 HS during the time of Augustus).\(^10\)

4. There was an empire-wide tax on the manumission of slaves at 5% (*vicesima libertatis*) set on the value of the slave.\(^11\) Under Augustus and Tiberius there was also an additional 4% sales tax on slaves (*quinta et vicesima venalium*)
Signs of the continuation of the 4% slave tax are mentioned by Beigel.\footnote{787}

5. There was also an empire-wide 1% sales tax \((\textit{centesima rerum venalium})\).\footnote{788} Some confusion amounts as to whether this corresponded to all sales within the empire, as Drexhage, Konen, and Ruffing imply, or only from sales arising from auctions as Beigel implies.\footnote{789}

6. Drexhage, Konen, and Ruffing mention that conquests brought the State in the first two centuries additional income as well, an example being the Dacian war, which allowed Trajan to conquer 165,000kg of gold and 331,000kg of silver. There was also the sale of 50,000 war prisoners. As a side-note, in combination with income no. 5, the annexation of Cappadocia in 17 AD allowed for a halving of the \textit{centesima rerum venalium}.\footnote{790} The only question regarding conquests is exactly how much of conquered wealth went into state coffers, into the hands of the military (the soldiers and officers) and the emperor, as a variety of scholars seem to have split opinions on the issue.

7. A significant amount of gifts or donations, primarily from the emperor but also from other private individuals, the amounts which varied naturally.\footnote{791}

8. Customs and dues called \textit{portoria}, which were raised throughout the empire. These were levied on the borders of provinces and generally ranged between 0.5 to 5% of the value of the goods crossing the borders. The actual customs duties could be leased out to private individuals who were then responsible for collecting the dues.\footnote{792} It seems that some municipalities during the Republic also raised them, but it is questionable if this continued into the Principate.\footnote{793}

9. There was also a large range of other types of taxes, some existing only for specific moments, or specific regions. For example a tax on edibles (\textit{edulia}) for the food brought into the city of Rome.\footnote{794} Another example is harbour-taxes, usually at around 2.5%, collected in each port (but it is possible that the money accrued to the municipality and not the state).\footnote{795} In essence, a variety of other smaller taxes existed which were levied at certain occasions and then later removed; listing them and their chronology falls outside the scope of this paper.
State Expenditure

The following is an example of a list of the known and of the larger types of state expenditure. The slight problem with this list is that the Emperor would start to pay a part of, or even the full amount, of certain types of expenditure. In most cases the exact range of the ‘subventions’ or the moment of commencement of the imperial subventions is not entirely clear.

1. The public cult (offerings, priests, celebrations, games, construction and maintenance of temples, etc.) insofar as the expenses were not payable by the temple itself. 796

2. The expenses of administration (libraries, mints, teachers, postal service) and the salary of various officials. 797 The postal service (cursus publicus) was established by Augustus’s imperial organisation, and according to a Chinese ambassador sent to the Roman Empire at the end of the first century A.D., the system was certainly impressive: “The condition of the roads and the milestones and the spacing of the postal stations and inns attracted his admiring attention.” 798 Furthermore, the actual size of the bureaucracy over time seemed to increase, especially when it became ‘intertwined’ with the imperial bureaucracy. Even though the salaries for all types of jobs and positions are known, for example, the salaries of equestrian procurators are known. They were split up into sexagenarii (salary: 60,000 HS), centenarii (100,000 HS), ducenarii (200,000 HS), and from the time of Marcus Aurelius into trecenarii (300,000 HS). Under the reign of Trajan there were 29 sexagenarii, 34 centenarii and 34 ducenarii. The total salaries would have then been around 12 million HS. The highest ranking equestrian prefects (praefectus praetorio and praefectus Aegypti) probably earned 500,000 HS. In total, the state expenses for the equestrian administrators and prefects increased constantly, especially since their number doubled in the period from 100 to 200 AD. However, it is interesting to note that the administration generally remained small in relation to the size of the empire. 799 All of the senatorial office holders, the number of which stayed almost constant throughout three centuries, received salaries as well - as long as they were outside of Rome. It is not clear whether this was also true during the reign of Hadrian for those that were situated in Rome. The highest salary was probably of the praefectus urbi (representative of the emperor in Rome). After him came the proconsuls of Asia and
Africa with a yearly salary of 1 million HS each. The other consular officials received between 600,000 and 1 million HS, while the lower ranking praetorian officials received between 200,000 and 500,000 HS. According to the calculations Drexhage, Konen, and Ruffing have taken from R. Duncan-Jones, the total salaries of the senatorial legates and governors for the 2nd century AD per year was about 43.5 million HS.\(^{800}\) It is unknown what all of the minor officials and workers in the bureaucracy received.

3. Military costs (as explained fully in the military section)

4. The yearly subsidy for the delivery of grain (the *annona*).\(^{801}\) The number of people receiving a dole during Caesar’s time was 300,000, which was lowered during the time of Augustus to 200,000 (more information included in the ‘Trade’ section). The state also sold grain at low prices, and often with a loss.\(^{802}\) Even though the price for the *annona* is not known (as parts of it were delivered in kind), Drexhage, Konen, and Ruffing estimate that if the price of grain was 2.5 HS per *modius*, which was the price in Asia and Africa, an expense of 30 million HS for these *frumentationes* would be attained. Since money also had to be spent in order for grain to be acquired, transported, and distributed, the total expenses at the end must have been close to 50 million HS.\(^{803}\)

5. The construction and maintenance of public buildings and ‘highways’ (roads, canals, etc.). As explained in the ‘Road Construction’ section, it seems this task was largely taken over by the Emperors, and as ten Brink correctly mentions by the municipalities (at least for roads, harbours, etc. within the municipality).\(^{804}\)

6. The gifts of oil, wine, and meat during special occasions to the plebs (*congiarium*), and money for the soldiers (*donativa*). Both of these also appear to have been completely performed by the Emperors. With regard to these *congiaria* (from the 2nd century AD: *liberalitates*), there were around 200,000 people eligible for this donation, and just from 29 to 2 BC, Augustus distributed 424.8 million HS. Through the *congiaria* a lot of money entered into the city’s monetary supply; when for example, Antoninus Pius (138-161 AD) donated each of the 200,000 inhabitants 825 *denarii* in nine *congiaria*, totalling 165 million *denarii*.\(^{805}\) The following table
(Table 8) shows the donated congiaria in HS in the time between 14 AD to 235 AD.\textsuperscript{806}

Table 8

<table>
<thead>
<tr>
<th>Ruler</th>
<th>Number of congiaria</th>
<th>Approximate monetary donation per head</th>
<th>Per head disbursement per year of reign</th>
<th>Total costs per year of reign (million)</th>
<th>Total disbursement (million)</th>
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<td>Pertinax</td>
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<td>Macrinus</td>
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7. The expenses for the foundation of freeborn children without any means (alimenta), and towards support for agriculture. The capital for this was loaned out to the communes which needed capital at a low interest rate (with land as security).\textsuperscript{807} Evidence mentioned in the ‘Finance’ section seems to support that it was yet again the Emperors who paid the lion’s share of this project.

8. From the time of Domitian onwards there were also payments to be made towards nations on the borders, especially in the north so that they would not attack. Drexhage, Konen and Ruffing mention that Domitian was asked to pay 8 million HS per year, and towards the end of the 2\textsuperscript{nd} century these payments increased and reached
high values (however, there is little evidence to suggest that Trajan or Hadrian were forced into this). Drexhage, Konen, and Ruffing, citing Cassius Dio, mention that Caracalla supposedly had to pay the barbarians the same amount which the Roman army received. Regardless of how implausible this may sound, the general idea that payments were high, should be understood.\textsuperscript{808}

9. Any extraordinary expenses in times of crisis, such as fire, earthquakes, etc. For the most part however, it seems that both the Emperor and state paid. Some crises could easily cost several millions; for example, Tiberius donated 100 million HS to Rome after a great fire.\textsuperscript{809} Other types of ‘crises’ or at least attempts to solve economic problems, are also attested for when in 118 A.D. Emperor Hadrian remitted the state debts of all Roman citizens from the past 16 years, which totalled to 980 million HS. A similar cassation was instigated by Marcus Aurelius in 178 AD (however, no monetary value is given).\textsuperscript{810}

It can clearly be inferred that state expenditure was varied, and it seems that it increased over time. Naturally, the total expenditures are unknown and the attempts to calculate them (as mentioned in the ‘Military’ section) are estimates at best. An example with regard to this discrepancy according to Hopkins who cites that “Frank very tentatively estimated total state revenues in A.D. 70 at about 1,200-1,500 million HS; several components of this guess, such as the revenues from Egypt, seem exaggerated…In sum, Frank’s first estimate of the state budget at 450 million HS was too low; but his estimate for A.D. 70 at 1,200-1,500 million HS was too high.”\textsuperscript{811} As the later section regarding inflation and GDP will show, it is very difficult to correctly calculate these because they depend on a lot of issues which go beyond the tenets of this thesis. For the large part, it has to be clear that state expenditure did not appear to pose too much of a problem until the mid-end of the 2\textsuperscript{nd} century A.D.

**Trade**

All of the previous sections depicting the Roman economy and its structures clearly show an expanding economy and an increase in production. It is self evident that this was only feasible through a concomitant increase in trade, as production could not have increased as much as it did during the Principate without a similarly significant increase in the volume of trade. To that effect, as already mentioned in an earlier
section, Hopkins writes that it took the same regions of the Roman Empire (in particular France, Italy, Spain) at minimum 1000 years to start reaching similar maritime trade levels as during the Principate. 812 The interesting aspect of this is that Hopkins believes in a subsistence economy, 813 and if he believes that a Roman Empire in a state of ‘subsistence’ reached those levels, what does that imply for a Roman Empire with a capitalistic market economy – something that has been proven time and again in this paper? Irrespective of this line of reasoning, Italy for example, was not a subsistence economy at the time of the 13th century (corresponding to the 1000 years) either, which a cursory glance at six randomly chosen articles depicting the 12th-14th centuries proves. 814

In stark contrast to Hopkins, Rostovtzeff believes in Roman capitalism, and he mentions that together with agriculture, trade was the main factor of economic life. He bases his argument on the fact that after the end of the civil wars, once Augustus came to power, a number of factors influenced the economy. These were: the unity of the civilised world; the shaping of one true state; inner and outer freedom; the complete security of the seas that was ensured by the Roman fleets which had become a constant mechanism; the number of well paved roads that were built initially for military purposes but were then used predominantly for trade; the renouncement of the government to be involved in the business transactions of the individual; the gradual development of the new areas of distribution in Gaul, Spain and the Danube provinces; the pacification of the alpine areas; the reconstruction of Carthage and Corinth; the lack of high tariffs; etc. He mentions that these facts, among many others, helped to make the economy vibrant and strong, and they subsequently not only show a desire and attempt to engineer an increase in trade but they reveal an actual increase too. 815 This is also proven by the existence of many small traders and shop owners mentioned in numerous inscriptions, along with the ruins of their shops, which have even been attested for in many provincial cities. 816

The aim of this section, therefore, will be to briefly depict Roman trade both from an internal and external viewpoint in an effort to show that trade was not negligible and that it could not have existed to the extent that it did in a subsistence economy, but that it must have followed on the capitalistic market path which the rest of the economy was set on. The overview will be brief as many connecting parts to trade
have already been extensively examined in previous sections; for example, the increase in the monetary economy, the increasing agricultural and industrial production and interconnected movement of resources, the changes in laws especially regarding agents and managers, etc. A second reason for the brevity is due to the fact that an in-depth examination of all trade within the Empire falls far outside the scope of this thesis, as it would require detailed knowledge of all industries in all sectors and their corresponding trade routes, over a time-span of 200 years.

**Overview of Roman Trade**

From a most basic viewpoint, the increase in production in the various industries and areas of the Roman Empire - especially those areas specialised in certain products - definitely required extensive trade routes and individuals working in the trade sector in order for the products to arrive at the areas of consumption, or for products to be processed in subsequent areas. There were two basic ways that trade was conducted in the Roman Empire: over water (sea, river) and over land – both of which shall be explored in detail.

Before maritime and land-based trade is examined, it has to be clear that the Romans naturally had a variety of laws regarding maritime affairs and commerce, which need not be examined in detail (and to a large extent aspects of said laws have already been covered, e.g. *actio exercitoria*, *actio institoria*, etc.). However, in order to have a good general overview, Johnston’s work can be referred to: “Although it is conceivable that the jurists might have created a mass of commercial law in the absence of any significant commercial practice in which to employ it, it does seem doubtful whether they would have developed structures and rules of much sophistication if their economy went little beyond exchange for purposes of subsistence. Yet the sorts of structures and rules considered…are of considerable sophistication…The documents of practice also indicate that complex commercial transactions did not take place purely in the imagination of the jurists. Many of the documents demonstrate remarkable fidelity to the law described in the legal sources.”

That Johnston can only be correct in his assessment of Roman commercial law, and that it could not have existed the way that it did in a subsistence economy, is also echoed by Register, who writes; “their [(Roman)] genius for law enabled them to develop a system of contract law favorable to commerce, based upon
Roman Shipping

Trade by river and sea during Roman times was by far the most cost effective and efficient method of transportation, due to the speed, range, and large volume of goods transferable. According to Beigel, shipping (navicularia) was an important part of the Roman economy, and its importance increased during the Republic and the early Principate.\textsuperscript{819} The fact that the Roman Empire essentially owned the entire Mediterranean helped tremendously, allowing it easy access to all of the cities located on the coast; incidentally, the majority of the largest cities of the period were either located directly on the coast or on a navigable river connected to the coast. To that effect, Erdkamp writes that “overseas shipment was cheaper than transportation by river, which in turn was cheaper than haulage overland.”\textsuperscript{820} This is, however, not to imply that the majority of the trade was conducted by sea, in fact Erdkamp mentions that the largest amount of movement of goods was naturally conducted overland, especially for short distances, and that sea (or river) trade was more conducive for medium to long distance.\textsuperscript{821} To that effect, with regard to yearly internal Roman wheat trade, ten Brink citing Hopkins, mentions a short-distance trade of 1,078,000 tons, mid-range of 295,000 tons and long distance of 165,000 tons.\textsuperscript{822} Irrespective of the fact that Hopkins assumes lower urbanisation ratios or a lower population size than the calculated figures used as reference points for this paper, the point that the majority of wheat was locally produced and locally consumed is clear, especially since Erdkamp reaches similar conclusions. In fact, Erdkamp mentions that the majority of agricultural products were locally consumed, but that the more specialised products tended to be consumed in areas that were further apart.\textsuperscript{823} This theory that consumption was predominantly local consumption is most probably valid; however, caution should be exercised that neither of the scholars’ views are taken at face value. Both scholars appear to forget that ultimately the total volume of goods transported will always be equal to the short-distance transport. In essence, even if a ship from a distant place arrives at a city where the products are to be consumed, there will still be a need for someone to unload the products and transport them the short distance that is needed to the market, warehouse, or whatever location they are destined for. As such, the volume of goods that are transported for short distances will always have an
advantage over any medium or long distance transportation. This aspect will become important to remember in the subsequent section, but for now it is merely necessary to remember that even though short distance trade would essentially come to equal the total volume of traded goods, both medium and long-distance trade (predominantly shipping) was important. This can easily be inferred from Hopkins’ numbers, where wheat - a staple food possibly grown ‘everywhere’ - still had some 30% of its production shipped over medium to long distances, not forgetting that Hopkins actually believes in a subsistence economy. Additionally, it is also clear that some regions of the Empire (like the city of Rome) could have hardly had sufficient wheat production ‘locally’ and therefore needed to import large quantities.

**Shipping Costs, Sizes, Capacities**

Much as in market economy, the costs, tonnage, etc with regard to maritime transport would have depended on a variety of factors; for example, according to Parkins, Smith and Laurence with regard to all types of transport costs - not only maritime transport - observe: “Our current knowledge of transport costs in the Roman empire is limited to the creation of an order of magnitude for prices, which would appear to be closely comparable to those in Britain and Europe from 1700 to 1800.” This fact clearly shows that yet again an additional aspect of the Roman economy is comparable to early modern Europe, which raises the question of how it is possible to make comparisons of a ‘supposed’ subsistence economy with an economy of early modern Europe that was clearly not subsistence.

As to the actual time spent sailing from place to place, it naturally depended on various factors such as wind, weather, ship, etc. For example, the trip from Sicily to Alexandria was possible in 6 or 7 days with good wind, from Cadiz to Ostia in 6 days; however, in poor weather the time could have easily been doubled (or more) making any comparisons to any other age that used wind-power very difficult. However, in general, according Yeo “transport was relatively fast even in ancient times. It was not until the building of the Yankee Clipper and the modern yacht that sailing ships of the modern era, even with an improved type of steering-gear, surpassed the speed of ancient ships.” Furthermore, “Ancient ships compare very favourably with those of the later Middle Ages (13th-16th centuries) in size, speed, and methods of propulsion” and the “average speed of ancient sailing ships was about 3 or 4 knots,
which was at least as great as the average for sailing ships till the middle of the eighteenth century."  

With regard to ship capacity, much like for transportation costs, the Roman world attests for sizes and cargo capacities surpassing any ships until approximately a millennia and a half later. Some examples of ‘large ships’ were:

- A ship commissioned by Emperor Caligula in order to transport an obelisk from Egypt to Rome with the ability of loading approximately 1,300 tons.  
- The Roman grain fleet had ships as large as 180 feet in length which could hold 1,200 tons of cargo.  
- Josephus Flavius travelled on a ship which accommodated 600 passengers only on deck, and it measured at least 40 x 15 meters (131ft x 49ft).  
- The Apostle Paul travelled on a ship which accommodated 276 passengers during the ‘off-season’.  
- Two of Emperor Caligula’s floating palaces (these were not ships, but barges meant for a lake), measuring 234 to 240 feet in length and 66 to 69 in beam.  

Furthermore, the maritime technology onboard was in some regard equivalent to that of the 19th-20th centuries. For example, the ships used ball bearings which were ‘only’ patented in 1906 and other more modern ‘inventions’ such as the stop cock to control the flow of water, the Admirality anchor, and “with alloys of metals we [(in 1932)] had considered as invented by our own metallurgy”.

That some of these examples were truly spectacular can be attested for by Collins, citing Casson, particularly in reference to the Roman grain ships: “seventeen centuries were to pass before merchant fleets of such tonnage again sailed the seas…[and that these Roman merchant ships] held three times as much cargo as any merchantman that plied between Europe and America before 1820.” Furthermore, that these examples were not fabrications is partially attested for by actual finds (Caligula’s floating palaces in lake Nemi), but it has to be remembered that some of these examples were built for a very specific purpose and there was either only one ship (like the obelisk carrier) or a very small handful of ships of that type (the grain ships, and Josephus probably travelled on one). With regard to modern day finds, the largest
wreckages of Roman merchant ships that have been discovered amount to a capacity of 600 tons, of which three ships were found by 1988.\textsuperscript{838}

It has to be understood, however, that on average most Roman merchant ships were of a tonnage below 100 tons according to Houston\textsuperscript{839}, which is corroborated to some extent by De Martino who mentions ships of load capacities between 31 to 155 tons.\textsuperscript{840} In general, the size and type of vessel would have corresponded to the market conditions of the types of products that were delivered, their routes, and the labour involved, etc. For example, according to Houston with regard to the state grain delivery (the \textit{annona}), emperor Claudius granted certain civil rights to all ships involved in the \textit{annona} above 70 tons, which highly suggests that this was some sort of a minimum ‘requirement’. A century later exemptions from liturgies were offered to those with ships above 350 tons or for those who owned several of 70 tons (most probably 5 of such).\textsuperscript{841} The \textit{annona} was a state-backed method which ensured that Rome would have enough grain, and as such it is no wonder that the state was interested in having large ships transport the grain, which is why most of the largest ships that have been attested for were often used as grain transporters for the \textit{annona}. In order not to cause any confusion, the ships, crews, middlemen, traders and financiers involved in the grain delivery were all private individuals: the state merely contracted their services and gave certain ‘rights’ to these individuals in order to ensure a steady supply of grain to Rome.\textsuperscript{842} An example of how grain delivery to Rome would have functioned is mentioned by Kloft, who writes that just for the grain supply of Rome, with assumed ship capacities around 200-400 tons (which means that he is most probably referring to the 2\textsuperscript{nd} century A.D.), it would have required 800 to 1000 deliveries to get the grain to Ostia. Subsequently, in order to bring the grain to Rome up the Tiber with riverboat capacities of around 70t, it would have required some 4,500 deliveries.\textsuperscript{843} This means that some 800-1000 ships of tonnage between 200-400 would have needed to arrive at Ostia during the year to deliver the grain, which is a number far superior to London from 1567 (October-November) to 1568 (May-August) where only 2 ships above the 200 ton capacity arrived in those 6 months, and in fact, a total of ‘only’ 339 ships of all sizes docked at London during that time period.\textsuperscript{844} As such, even if for the sake of simplicity the numbers are doubled, London had a fewer total number of ships (of all sizes) arriving during the 16\textsuperscript{th} century than Rome did in the number of ships that were only carrying grain! This
is actually not surprising considering the much larger population of Rome; however, it demonstrates that a large amount of ships of varying sizes were arriving in Rome on a regular basis and it also shows why “Rickman has estimated that the barges necessary to transport the city’s grain supplies (to say nothing of the vast quantities of other goods) would have been nose-to-tail along the river between Ostia and Rome throughout the entire year.”\textsuperscript{845} Even though Rome was by far the largest city in the Empire, other cities above 100,000 inhabitants existed; this, coupled with the ‘high’ urban ratio (relative to pre-modern levels) and the fact that various production centres were located in distant specific areas, must have meant that a large number of ships of all sizes were plying the seas. This is attested for by Eudbanks, citing the Roman poet Juvenal (late 1\textsuperscript{st}, early 2\textsuperscript{nd} century A.D.) who “says that so great was commerce that the sea was more peopled than the land.”\textsuperscript{846} Irrespective of the fact that the quote should not be taken at face-value, its implications for Roman shipping are clear: in combination with the knowledge that ships, ship technology (speed and cargo capacity, not so much other aspects like navigation, etc.), and costs of transport, were only truly surpassed in the 18\textsuperscript{th} century, should clarify just how important and how ‘powerful’ Roman commerce on the seas and rivers was.

\textit{Structure of Roman Shipping & Associations}

The actual makeup of Roman shipping (river or sea), much like the remainder of the Roman economy, was very diversified and was structurally organised with the existence of owners, managers, labourers, etc. As already explained in the manager section, one person could have been a ship owner, who either was or had (by appointment, or rent of boat to third party) a shipper (\textit{exercitor}), who then hired a shipmaster (\textit{magister navis}), who in turn could have either been the captain or who could have hired a captain, who then could have hired the various specialised seamen (\textit{navicularii}), etc. Every link in the managerial and labour chain would naturally, according to Roman law (which has already been extensively covered), have certain rights, liabilities and regulations with regard to the work being conducted. A more ‘unique’ aspect of Roman shipping is the existence of clearly outlined attempts to mitigate risk by the underwriting of ships, as exemplified by Cato and his formation of an association which owned 50 ships, the involvement of just as many investors, and his ownership of one share in this ‘company.’\textsuperscript{847} Even though the associations (\textit{societates}) will be covered in greater detail in the finance section, it has to be clear
that Romans could and did combine into business associations: “The simplest ancient Roman commercial form was the societas, a term often translated as ‘partnership’ because it referred to an agreement among Roman citizens to share an enterprise’s profits and losses.”

Although the societates existed in almost all parts of the economy, they appeared to be especially useful in the domain of shipping due to the higher risk of losses (if a ship were to sink, then everything would be lost in one strike). For this reason, and for reasons of convenience with respect to being able to conduct business much more easily along the major ‘shipping lanes’, examples of shipping associations exist - either as societates, or as more ‘loosely’ functioning associations (collegia). To a certain extent, the collegia can be viewed as a form of a fore-runner to the medieval guild system (especially by the third century A.D. under Alexander Severus); however, they were more akin to social or religious clubs than anything else during the Republic and early Principate.

Unlike the societas, the members of a collegium were not direct partners in a business venture: they bore more resemblance to club members who, according to Verboven “shared the same basic objectives; to forge or reinforce mutual ties of solidarity by pooling resources for dining and wining and for ensuring members a benefiting funeral. But the level at which these activities were deployed and the degree to which they were integrated in public life…varied enormously. Some collegia also deployed activities of a different kind, ranging from voluntary [fire]fighting to assisting the annona”.

According to O’Donnell “the collegia consisted of three persons called corporati; a family of collegia was called a universitates; the collegia could hold property in common, it might sue and be sued, its rights and the rights of the several members were legally separated, it remained in existence even though all of the individual members changed, and it was governed by its own bylaws so long as the latter were not in conflict with Roman statutes…These organizations were purely voluntary associations of private persons.”

This should make it clear that while the societates were actual partnerships with a share of profit and liability for each member in the enterprise, the collegia were more akin to clubs with the aim of providing mutual assistance. According to Stern this took the form of: “Guilds, religious communities, and resident fellow countrymen, organized in stationes, assisted members travelling abroad. Shipping companies from all over the Mediterranean had offices in Ostia…Many eastern Mediterranean cities were represented in the Roman forum; the Tyrians and Beirutians had offices in Pozzuoli.” It is precisely this aspect of the
various *collegia* in aiding their members, especially those involved in shipping, which allowed for a greater ease of commerce and the sharing of information in the Roman world. Whether the shipping ‘companies’ and/or ‘associations’ were *societates* or *collegia* made little difference to the extent of aid that was offered or to the increase in commercial transactions and maritime shipping as a whole, although the two were different forms of ‘economic entities’. The only question remaining open is the actual meaning of *stationes*, where Stern appears to concur with Aubert’s assessment that they were merely ‘relay stations’.\(^{853}\) In contrast, La Piana seems to imply that they were a different form of association not connected to the *collegia*, and that they were more like ‘national establishments’.\(^{854}\) While it is hard to evaluate the evidence, especially since the term most probably changed meaning over time, the general view is that *stationes* truly were just relay stations; when La Piana mentions the national *stationes*,\(^{855}\) this does not change the fact that the word *stationes* means relay station, implying that there could have been a relay station for any type of association, municipality, company, etc. thus granting validity for La Piana’s assessment of the term.

Before the next section on land trade is examined one more important point has to be mentioned: that neither the *societates* nor *collegia* were existent exclusively in the maritime commercial world. Both types are attested for in basically all forms of the economy, be it commerce, industry, etc. - and for that matter, in large numbers. For example, according to Verboven, out of 2,432 attested inscriptions of *collegia* some 1,500 have been identified as corresponding to ‘truly’ professional associations (how many of the others were only ‘partial’ is unclear) – this figure applies to Italy and the Latin provinces alone. Just the city of Pompeii attests to some 25 different professional *collegia*.\(^{856}\) Some examples of commercial *collegia* have been attested for in the wine trade in the Gallic and German provinces, shipping on the Rhone and Saone, land routes through the Alps, shipping on the lakes Como and Bodensee, Spanish olive oil traders, shippers connected with the *annona*, bakers in Rome, barge skippers on the Tiber, firemen in various cities, cloth dealers in the cities, gold smiths, etc.\(^{857}\) Almost any type of job or any traders plying the same route could have, and in many cases did, form a *collegium* - the only real limit was the acquisition of a license from the state for the formation of a *collegium* (a requirement from the reign of Augustus and onwards)\(^{858}\) and the requirement that there were sufficient members
(i.e. funds) to maintain the collegium. Naturally, depending on its type and the job that the collegium represented, members could theoretically be comprised of anyone - even slaves are attested to have been members of collegia.\textsuperscript{839} As for the societates, they could also theoretically be found in any part of the economy, but they are not directly attested for as often as the collegia are because no license was required from the state for their formation. Furthermore, in most cases, as with any partnership, they would cease to exist once the partners finished the venture that had been started. It is also important to remember that nobody was forced into any association, it was purely voluntary, and neither is there mention of any restrictions if one was not part of an association (which was the case under the guild system in the Middle Ages). Therefore, the only question remaining to answer is why subsistence theoreticians appear to believe that such partnerships or clubs could have existed in a subsistence economy, especially to such a large degree and with such high amounts of ‘specialisation’. In order to attempt to explain this, a quote from Finley can be taken, where he writes: “In the innumerable little benevolent societies, commonly organized by trade or occupation, that mushroomed in the cities and the towns of antiquity, especially in the Hellenistic world and the Roman Empire, the communal activity was restricted to religious, social and benevolent affairs; in no sense were they guilds trying to foster or protect the economic interests of their members, nor did they reveal a trace of the hierarchical pattern of apprentice, journeyman and master that characterized the medieval and early modern guilds. Slaves and free men (chiefly free independent craftsmen) could be fellow-members of a society, precisely because of the absence of any feeling of competition.”\textsuperscript{860} The quotation is confusing in several aspects, firstly, why does Finley believe that they had no economic function? For example, it is hard to understand why a collegia of wine-merchants would not have provided some sort of economic benefit to its members, even if it was only for the exchange of information. A direct example is C. Apronius Raptor, a wine merchant and member of the city council of Trier who was patron of the corpus vinariorum (a collegia of wine-traders ) and the corpus nautarum Rhodaniciorum et Araricarum (a collegia of shippers from the Rhone and Saone).\textsuperscript{861} The fact that he is part of a collegia of wine traders (and he is a wine merchant) and of a collegia of shippers which basically connect Trier with the Mediterranean, sounds very much like an attempt for him to attain ‘economic’ benefits: this can hardly be seen as an ‘accident’, especially since Trier is actually on the Moselle river and not on the other
two rivers (but ships going from Trier to the Mediterranean would need to pass those other two rivers). As such, Finley’s claim that no economic benefits were attained is not at all clear. The second problem with Finley’s quote is his apparent dissatisfaction with the fact that the *collegia* were not like the guilds of the Middle Ages, namely, that they were not hierarchically structured and that they did not have restrictions towards their members. This is also very confusing because it is ‘commonly’ accepted that the guild system of the Middle Ages was far too restrictive, and only as the guild system began to lose its strength did the market economy and capitalism emerge - as we know them today. To that extent, a guild system is a restriction to a purely capitalistic market economy. In fact, Finley’s complaint that guild systems did not exist in the Roman Empire positively highlights the existence of a capitalistic market economy, especially in light of the large and diversified number of *collegia*. Ironically, as already mentioned, during the reign of Alexander Severus and beyond, when the *collegia* began to resemble the guilds of the Middle Ages, the economy was much weaker and far more rigid than it was during the early Principate (until the end of the 2nd century A.D.).

**Land Trade**

As already proven, the main form of transport would have eventually consisted of short-distances and overland transport, irrespective of whether the goods were brought from far off locations. The importance of this signifies that a significant amount of individuals would have been required as either fully or partially employed in land transport (short distance). If the Roman poet Juvenal perceived the seas to be ‘more’ populated than the land was, only as a result of commerce and shipping, then what would he have said for the amount of people required for land transport? As an example, one can only try to imagine the sheer amount of labour in transportation and porterage that must have been required in order to keep Rome - a city of 1 million inhabitants - running. The copious amount of basic goods, consumption goods, and luxury goods circulating in the richest city of the Roman Empire must have been tremendous, and what of the other large urban areas such as Alexandria, Carthage? According to Brunt, “there can be no doubt that unskilled labourers, free or slaves, were required on a large scale. At Rome and Ostia great numbers must have been employed in unloading cargo and in transporting it from the docks to shops and storehouses.” Furthermore, as the earlier section on Roman road construction
mentions, the amount of primary and secondary roads was extensive and they were regularly used, which according to Kloft is easily attested for by the large number of inns dotted along the various roads which gave room and board to travellers. This fact ties in with the ‘Roman Road’ section, as it raises the question of how could inns have come into existence on ‘lone’ roads that were supposedly rarely used, and if they were, then apparently only by the military? The proprietors would have made heavy losses were it not for a regular amount of travellers using the same roads, which once again proves that the usage of roads was predominantly for commercial purposes and that they were used after all. Since this aspect should be clear, it is only necessary to briefly mention the individuals involved in land trade and transportation.

The individuals involved in land transportation were either professionals or part-time/seasonal labourers. According to Erdkamp, although “there was an economically significant group of professional transporters—by ship, river-boat, pack animal, or horse-or ox-drawn cart—much more transport was undertaken by people (and animals) who were primarily engaged in agriculture.” Additionally, according to Brunt, with regard to the urban areas “the common people in the city of Rome had to earn much of their living in casual employment, partly for instance in the unloading and porterage of goods that arrived by sea, partly in the building trade.” This signifies that in general, the majority of land transportation was actually conducted by occasional urban dwellers or peasants (farmers) in rural areas and not by professionals, even though professional transporters most certainly did exist. The rural aspect is especially important to remember as land transport is yet another area where the peasant was able to earn some additional income in a non-agricultural sector. In fact, to some extent transportation (as part of the tertiary sector) is yet another ‘hidden’ aspect of the many activities which the agricultural regions were conducting not only for themselves, but also for third parties. In the same way that industrial processes such as wine, oil, and bread production were ‘hidden’ within agriculture, so too was transport activity. An example, of not only transport for personal purposes, but also for third parties, is mentioned by Erdkamp who discusses Spanish farmers that would travel to neighbouring regions in order to conduct trade, transporting their own produce to these areas and bringing whatever they traded/purchased, back. In particular, some “farmers produced charcoal with their excess labour; periodically they would transport the charcoal to a town of their region
in order to sell it.”

Regarding working for third parties, he writes, that in “France the network of rivers was made good use of to transport goods. However, in many places the goods had to be hauled overland from one river to another, which was cheaply undertaken by seasonal labour. Because of their need to employ their labour and that of their animals throughout the year and the limited ways of doing so, the farmers would undertake almost any transportation they could get. Any gains were profit.”

That peasants and farmers truly did this is also attested for by Viswanath, who writes specifically that farmers in Palestine occasionally earned additional income in transportation (donkey transport).

As for the urban population, it was very similar: it consisted of either professionals or individuals who occasionally conducted some dock-work or porterage, and who were paid accordingly for their work.

As such, irrespective of whether they were urban or rural, a large amount of individuals was required for all of the transportation that was needed for short distances and for overland. As already described, any goods transported by ship from far away would ultimately have to be transported for short distances by land to their eventual destinations: for this, a large amount of people would have been needed, especially in the large urban areas. These individuals could have been professionals; however, it seems that they were predominantly casual labourers (peasants) who used this opportunity to earn additional income in combination with their customary work.

As a last quote, regarding traffic and transportation within the Roman Empire, both in terms of maritime (sea/river) and land, Wells writes that in “the better imperial days there are signs of more traffic within the confines of the empire than before or since till the nineteenth century.”

Even though Wells might seem to be somewhat farfetched with his assessment of internal traffic being equivalent to the 19th century, there is one aspect to remember: internally, the Roman Empire had no or extremely few barriers to trade beyond minimal taxes and transportation costs, while the former regions of the Empire in the early modern days spent a lot of time raising duties, dues, and tariffs against each other, and hindering others from trading within their own domains. It is therefore certainly not difficult to understand Wells’ assessment, and to imagine that such a situation could have existed – especially in per capita terms.
Roman Markets and Merchants

It should be clear from the evidence regarding transport and the section on public construction, that internal transportation within the Empire, be it over water or land, was comparable to the 18\textsuperscript{th}-19\textsuperscript{th} centuries in the former regions of the Empire (especially per capita). It is not necessary to reiterate that this transport was obviously connected to trade, as it is hardly conceivable that such traffic would have existed without trade. This fact also directly ties into the production aspect of the Empire, because in order to achieve such traffic in goods, there had to have been a concomitant production. To that extent, this section will therefore briefly examine how trade and the markets functioned, and it will once again become clear that the Roman Empire was a market economy and not a subsistence economy.

Before the examination begins it has to be clear that throughout the Roman Empire there were a large variety of markets. Depending on the location, be it a city, town, village, etc., and depending on the type of market because even specialised markets are known to have existed (e.g. the Campi Macri which was a yearly fair known for its livestock and attracted attention from most of Italy), markets could actually be found nearly ‘everywhere’ at some point in time. For example, there were weekly markets (\textit{nundiae}) in the ‘smaller’ and more rural localities, as well as markets that were held yearly (\textit{mercatus} or \textit{conventus}). The market days of various localities were held in order not to overlap with each other (the markets would travel from place to place). These were mainly frequented by the farmers, city craftsmen and travelling traders, and used often for the sharing of information.\textsuperscript{872} Naturally in the larger towns and cities, there were permanent markets and a large number of shops. An example of large markets and even Roman versions of ‘shopping malls’ are attested for by Trajan’s Market, which had around 150 enclosed shops contained in its structure.\textsuperscript{873} As such, it becomes clear that a full discussion of all types of markets and shops falls completely outside the tenets of this paper; however, it should be clear that Roman markets existed in a variety of forms and places. A side-aspect connected to Roman markets is that some cities were used as ‘central’ trading locations, for example, all of the cities that were located on the coast where goods were brought in by seafaring ships and which also had connections to rivers going inland. Two of the more famous examples are Ostia and Arles (France).\textsuperscript{874}
Much as for other aspects of the Roman economy, and as already touched upon in various other sections, Roman trade could also function along the lines of numerous ‘middle-men’ or there were direct producer to consumer sales. For example, according to De Martino, the merchants consisted of *negotiator*es and *mercatores*. The first were general businessmen, and the second were merchants in the proper meaning of the word. Even though various scholars depict the *mercatores* as wholesalers, De Martino believes that trade was conducted in a much simpler fashion, and according to him the existence of wholesalers is not necessarily attested for. In most cases it was the producer who sold directly to the customer, and in those areas where there were traders who purchased the goods from the producer and then sold it to the customer, they mainly functioned as transporters.\(^{875}\) The problem with such a theory, however, seems to be negated with the large variety of contracts already mentioned in this paper. For example, Pliny mentions in a letter that he had sold a certain amount of wine to merchants one year in advance, and that the price of wine had fallen to the dismay of the wine merchants who had actually believed it would rise (which means that Pliny would definitely make a profit, and the merchants would possibly make a loss). Even though the merchants were coming to Pliny’s estate to collect the wine and take it, there is absolutely no mention of transportation costs or similar.\(^{876}\) As such, it is hard to understand why De Martino believes middlemen were only used as transporters because it is clear that even though they did come to gather the wine, they were purchasing the wine in order to sell it in the market. Or what of the *redemptor*’s mentioned in an earlier section? While they most certainly harvested and transported, their ultimate purpose was to sell the goods at the market, making them merchants and not only transporters. As this paper has shown multiple times, the Roman economy was far more complex and structured than commonly believed, and theoretically, almost any form of middlemen, agents, and merchants could have existed. It all depended on the supply, demand, and on economic conditions. However, this is not to deny that large amounts of producers sold directly to the consumers, which has been attested for by the ‘industrial districts’ of Roman cities where the workshops were situated right next to the shops, and many times they were even run by the same person. Yet once again it depends on supply and demand. If the producer only makes small profit from the sales he/she cannot afford to have middlemen; however, if the producer produces large quantities with large profit
margins it is possible that one or more middlemen exist. As an extreme example, the famous ‘silk road’ which went overland from China to Europe can be referred to: that particular enterprise would have involved a vast amount of middleman. Naturally, everyone in that chain was capable of making profit, and as such why there would have been any hindrances in the trading system of the Roman Empire is not clear.

Much like for any capitalistic market economy, the conditions corresponded to market forces. A specific and concluding example of this concept, with regard to clothing, is mentioned by Jones, who writes: “in the smaller towns and villages the customer no doubt normally bought locally produced clothes direct from the weaver. In the larger towns, especially those which depended on imports, there were clothing dealers (vestiarii): they are frequently recorded at Rome, and occasionally elsewhere, and seem to have been humble folk, mostly freedmen. We also hear of negotiatores or mercatores, who seem to have been importers of higher class garments from the larger centers of production…There were also itinerant merchants, who went from town to town with their bale of clothes, often making a regular annual round…The greater merchants also employed circitores, agents who went around selling their wares.”

Roman internal trade

It should be evident that Roman internal trade - especially in respect to the same regions of the Roman Empire during early modern times - was possibly equivalent to the 18th-19th centuries in terms of per capita. To fully enumerate and describe each and every trade route within the Empire would be a task far beyond this thesis. There have been attempts by a large number of authors to explain the trade routes in general, at least for the chief products; however, to fully list these ‘main’ products for each province would require significantly more research, especially considering that trade routes - for even staple and main products - tended to change over time (200 years in terms of this thesis) and each route would then have to be correctly placed in chronological order (which a large number of the scholars used for this section do not actually do, beyond very rough estimates). Furthermore, most of the knowledge of trade routes tends to be skewed towards an italocentric (or Egyptian) view. While this process might be useful in explaining what occurred in Italy (which will be discussed in a later section), or Italy’s attitude towards production in the provinces, or for describing the Roman Republic before it expanded, it does not provide a sufficiently
accurate overview of the Principate in the 1st and especially the 2nd century A.D. For example, very little information seems to be mentioned with regard to trade between the provinces, irrespective of the fact that this type of trade is mentioned frequently as existing. Additionally, little research appears to reveal what trade actually occurred within a particular province (once again except for Italy and Egypt). In short, at least judging from the sources used, the depictions are at best generalised and also skewed. Furthermore, various sections in this paper have already provided detail regarding given types of goods and their subsequent trade routes, such that a regurgitation of ‘general’ facts is not deemed necessary. As such, just for reference purposes, a few examples of provincial trade will be mentioned.

The first example deals with an increase in the economic strength of Gaul, and that according to Rostovtzeff, business life in Gaul reached an incredible intensity. The land became ‘rich’ due to an increase in agricultural and industrial production, and Gaul thus achieved a concomitant increase in trade. Gaul also became an important consumer for both foreign and local wares. Furthermore, the Roman borders did not stop Gallic traders from trading: in fact, Gaul had always had trade relations with Germania which were expanded even further. Rostovtzeff writes that products of Gallic industry were solid and cheap, and even though they were not very elegant, they were welcome throughout the empire. The second example deals with the trade of Spain, Africa and Britannia which according to Rostovtzeff was neither as large nor as extensive as that of Gaul. The market for the products of these lands was not so large, and their export markets - except for export markets to Rome and Italy - were mainly focused on inner trade and local goods. It is perhaps worthy of note to say that even though Rostovtzeff claims the products of these three provinces ‘only’ went to Italy and Rome, the scale of production was nonetheless impressive. Africa was known as a breadbasket; Britain, and especially Spain, were known for their metals. In fact, both the ‘Roman Money’ and ‘Mining’ sections clearly depict the vast amounts of metals coming from Spain, metals that were eventually intended for the entire market of the Roman Empire (especially in the form of coins). It is questionable why this would not count as being important, especially when considering the tremendous amount of investment that would have been required to make these mines operational? Spain (especially the region of Baetica) was also known for its export of olive oil to Italy. Exporting aside, there also must have been
extensive consumption of all kinds of goods, not only local, occurring in all the three provinces. For example, just the city of Carthage in Africa allegedly had 500,000 inhabitants in the 2nd century A.D., and it is hard to understand why the consumption patterns of a city of this size would not be deemed important? Dozens of articles and books have been written about Rome’s consumption before it reached the size of 1 million, and yet Roman Carthage with 500,000 inhabitants is not worthy of note? For that matter, the economic aspect of Alexandria in Egypt during the Principate, with a population similar to that of Carthage, is mentioned very often - and yet once again Carthage is barely ever mentioned other than an aside or as a footnote. It should be clear from these brief examples that casting Spain, Britain, and Africa ‘aside’ is perhaps too rash; however, it should be clear that Gaul surpassed all three (but not in combination). Even though the examples cited have been taken from the western half of the Empire, this does not mean that the eastern half has been overlooked. The eastern half, as already mentioned at various points in this paper, was already largely sophisticated before the Romans ever arrived, such that its own trade routes and consumptions patterns were not so dependent on Italy, and didn’t need to be created (only ‘rebuilt’ in most cases). Enough information exists regarding the extensive economic strength of the East, which shall become especially evident in the ensuing section on external trade. Before external trade is covered, there is one last detail to mention: with regard to state politics concerning provincial trade, and according to Rostovtzeff, due to the very low and meagre dues payable at the borders of provinces, the provinces were able to become economically stronger and this furthered the entrepreneurism of traders and shipowners, allowing them to organise their business and organisations. As such, the entire policy for inner trade and trade between the provinces was a policy of ‘laissez-faire’.

**Roman External Trade**

Roman external trade, though nowhere near in scope as internal trade, was still an aspect of the economy worthy of mention, even though Rostovtzeff claims it should not be overvalued. He mentions that trade with neighbours and far-flung areas like China and India did not play a large role in the economic life of the early empire since this foreign aspect of trade had always stimulated the imagination of both the contemporaries of the time and modern historians and as such it was often
exaggerated.\textsuperscript{882} Irrespective that Rostovtzeff is largely correct, external trade is important to this thesis since the high point of external trade occurs during the Principate. According to Schoff: “Communication between Mediterranean lands and the Far East, which had been growing in importance since establishment of political contact in the conquests of Alexander and the consequent opening of the overland caravan routes, became exceedingly active between the first and third centuries of the Christian era through the discovery of the periodicity of the trade winds and the opening of maritime traffic.”\textsuperscript{883} In essence, if the high point of external trade exactly corresponds to the high point of the Roman economy, which is naturally no coincidence, it is one further proof of economic growth and strength during the Principate, and this is definitely the case as outlined by Schoff. Furthermore, Schoff only discussed the trade to the Far East, while the Roman Empire had other closer neighbours to trade with. It is therefore the purpose of this section to briefly mention the external trade of the Roman Empire and the repercussions of it, especially in terms of precious metals as some authors conjecture that there was a drain of metals to its external trading partners which hurt the Roman economy.

The trade with the north and south was predominantly a trade between the ‘sophisticated’ economy of the Roman Empire and ‘barbarians’ and ‘tribes’, with some minor exceptions. As such, the majority of the trade with these regions was in an import of raw materials and an export of manufactured goods (from Roman perspective). The Saharan tribes exported dates and slaves,\textsuperscript{884} but the trade was very minor.\textsuperscript{885} Central Africa was slightly more important as it exported ivory, precious wood (African citrus wood), gold, spices,\textsuperscript{886} and wild animals for the amphitheatres.\textsuperscript{887} Most probably the central African produce came from the kingdoms of Meroe (probably corresponding to the north and north-east part of Sudan) and Axum (Ethiopia and Eritrae) which can be perceived as ‘exceptions’ to the ‘lack’ of ‘sophistication’ in the areas. The imports from these regions seem to have been largely covered by exports from the large variety of Egyptian industrial products.\textsuperscript{888} There is also evidence of trade with ‘German’ tribes especially with the tribe of the Marcomanni, and to some extent the Goths as well, and eventual trade with Scandinavia. This is attested by coin finds in Denmark and Sweden though seemingly only from the 2\textsuperscript{nd} century A.D.\textsuperscript{889} Coin finds in Germany naturally display an earlier time corresponding to the 1\textsuperscript{st} century A.D.\textsuperscript{890} Not only coins, but other
items have also been discovered, for example, according to Dobson, “it may be of interest to note certain domestic contrivances which were adopted by the Danes from the Romans, and which prove the barbarians to have had a fairly intimate knowledge of Roman ways. The Roman plough, the distaff, metal shears made in one piece, not two, like our scissors, the balance, and steelyard, together, as we shall see, with the fashion to wear breeches and sandals, were all adopted from the Empire, in not from the Romans themselves. The system of weights was based on the denarius".

Furthermore, there “grew up a great taste in Scandinavia for Roman glass beakers and bronze vessels. These were the most popular of all the Roman objects imported, and examples of them will be given; but it is clear that there was a real cultural renaissance in the north from about the third century onwards, due to contact with the Roman Empire.”

In general the export north was therefore in items of daily usage, manufactured items, wine, oil, and jewellery as well. As for the import from these regions, it seems it was largely in amber, skins, and possibly slaves (at least from Germany).

Therefore, as a general conclusion, with some possible alterations for the two southern ‘empires’, trade with these regions tended to involve an export of Roman manufacture and occasional coinage and an import of raw materials, and generally it is questionable how intensive the trade truly was.

Even more important and most probably larger (even though exact numbers are missing, but it is implied) was the trade to the east. In the northeast the Greek cities on the coast of the Black Sea, especially Olbia, Chersonesus, Panticapaeum and Tanis prospered in the 2nd century A.D. The kingdom of Bosporus exported a lot of corn and raw materials, especially fur, fish, wax and hemp. The export went mainly to the Greek cities and the Roman army located on the Danube and in Cappadocia. South Russia became important to Rome, and especially the free city of Chersonesus became the main center of Roman influence in south Russia, and it was protected by Roman troops against attacks from the steppe inhabitants. In the southeast there was trade with the coast of Somalia and Arabia. In fact, regarding Arabia, Augustus had sent a special military expedition to secure the harbors in the south end of the peninsula in order to attempt to protect at least part of the trade going to India, and to possibly cut out some middlemen. This is also evidenced by the fact that Augustus possibly wanted to have additional ports for the Roman military fleet which patrolled the Red Sea. The main exports of Arabia were assorted foodstuffs,
spices, precious metals (gems etc.) and camels.\textsuperscript{899} Even though it is not directly mentioned, most probably Arabia also imported assorted manufactured wares and coins (coins will at least be mentioned later).

The ‘most important’ or at least the most often mentioned trade occurred with the Far East with the nations of India, and from India onwards to China (only the India trade seems to have directly been conducted by Roman merchants). Trade with India was vast and involved a large variety of goods. Some examples of export to India include articles like: grain, wine, olive oil, copper, tin and brass, Egyptian clothing, linen, glass articles, tools and weapons, ointments and assorted foodstuffs, purple cloth,\textsuperscript{900} slaves, etc.\textsuperscript{901} Even more evidence of the large assortment of goods can be attested by a perusal of the “The Periplus if the Erythraean Sea: Travel and Trade in the Indian Ocean by a Merchant of the First Century” written at some point in the first century and detailing the voyage of a merchant to India. The merchant mentions large lists of products both imported and exported and even allots it to individual cities, with at least some ten to twenty different products mentioned being traded at each city. An example being: “There are imported into this market-town [(Barigaza)], wine, Italian preferred, also Laodicean and Arabian; copper, tin, and lead; coral and topaz; thin clothing and inferior sorts of all kinds; bright-colored girdles a cubit wide; storax, sweet clover, flint glass, realgar, antimony, gold and silver coin, on which there is a profit when exchanged for the money of the country; and ointment, but not very costly and not much. And for the King there are brought into those places very costly vessels of silver, singing boys, beautiful maidens for the harem, fine wines, thin clothing of the finest weaves, and the choicerest ointments. There are exported from these places spikenard, costus, bdellium, ivory, agate and carnelian, lycium, cotton cloth of all kinds, silk cloth, mallow cloth, yarn, long pepper and such other things as are brought here from the various market-towns. Those bound for this market-town from Egypt make the voyage favorably about the month of July, that is Epiphi.”\textsuperscript{902} The evidence is in fact overriding considering the large variety of goods traded, and as such it is not clear why Hammond writes that India and China did not require Roman raw materials or manufactured goods beyond perhaps Syrian glass products that were exported to China in large quantities.\textsuperscript{903} In fact, beyond the evidence from the merchant, archaeological excavations in India have discovered various types of ceramics (lamps, bowls, etc.), glass, and wine amphorae (which also proves wine was exported to
India) which clearly originated in the Roman Empire, clearly giving even hard
evidence to the fact that trade was also conducted in manufactured goods. In many ways the same accounts for
imports (as noted by the example of the merchant), as it was not only ‘luxury’ items
as many scholars seem to believe that were imported, even though various types of
‘luxury’ imports did play a large role. For example special storehouses for spices,
horrea piperataria, Indian pepper, were constructed at Arsinoe (Egyptian port on the
Red Sea) during the 1st century A.D (probably around 90 A.D.). The fact that
storehouses only for Indian pepper were constructed is definitely very telling of the
amounts being imported into the Roman Empire, as it tends to imply pepper meant for
mass consumption (at least by the middle class and up) and not a merely a couple of
kilograms of pepper costing exorbitant amounts for some random senator.

As a conclusion, it is clear that sea trade between the Roman Empire and India (and
indirectly further) was extensive and entailed a large variety of products being both
imported and exported. This fact also explains the desires of several Emperors in
expanding and furthering this trade, as for example is attested for Augustus, Claudius,
Nero, Trajan, Hadrian, and Marcus Aurelius. Why Vespasian and Domitian were
not interested is clear from the fact that they (especially Vespasian) had to wrestle
with repercussions of the Roman civil war after the fall of Nero. In fact, beyond the
attempts of Augustus (as already mentioned), Trajan “of all the Emperors he is the
first—and the last—to have approached India and its problems as closely as the
Persian Gulf, when during his Parthian campaign (A.D. 114-117) he occupied
Mesene, the estuary region of the Euphrates and Tigris, and ordered a fleet to be
stationed there which could reach India…it must be stated that Trajan concluded
rather than initiated a development when he ordered the Arabian kingdom of the
Nabataeans to be annexed as a province in A.D. 106. As a client kingdom, it had
functioned as a terminus for both the Red Sea traffic and the caravan commerce of
South-eastern Arabia under the lucrative control of Rome. Of his predecessor’s
Eastern innovations it was this which Hadrian did not cancel, while he deemed
untenable—or unprofitable—his attempts to bring the Northern, i.e. Mesopotamian,
routes under Roman authority.” Regarding Petra and Arabia, that the sea-going
trade did not hurt the caravan routes going to the east, and that these regions
experienced an increase in wealth is also attested by Rostovtzeff, who writes that the
development of the foreign trade of Alexandria did not undermine in any way the caravan trade of Arabia and Syria. It seems that Petra in Arabia reached its highest point after being made part of the Empire in 106 A.D. The 2nd century was also the time of greatest wealth for Palmyra in Syria, which reached its peak after the reigns of Hadrian and Antoninus Pius. This is not unusual considering the fact that Trajan had waged a successful war against the Parthians and the peaceful politics of Hadrian and his successor allowed for Palmyra’s trade to develop. In Palmyra as well as Petra the trade was largely in the hands of the local merchants who became very wealthy through this. The same can be attested for cities like Bostra, Philadelphia (Amman), Gerasa, and Dura, all which were involved in the same trade. Through them the trade came to Antioch, and the cities on the coast of Syria, Phoenicia, Palestine and Asia Minor. This makes it clear that not only the sea trade, but also trade over land towards the east was profitable and was conducted during the same periods. The only question remaining is the exact scale of the trade, and though exact numbers are not known, there are some specific indicators that go beyond ‘mere’ hypothesizing about increase of wealth in the cities involved in trade with the east.

The first evidence is mentioned by Strabo during the reign of Augustus, who writes that 120 ships set sail annually towards India from the Egyptian port of Myos Hermos. Considering the fact that Egypt had three main ports from which trade was conducted with the East, and 120 ships left from only one of those, and that the reign of Augustus was probably not the peak of this trade, it follows that a ‘lot’ of ships were leaving yearly for India during the peak of this trade. It is unknown how many ships left the other two ports (or any other minor port for that matter), or how much trade went overland, but for a simple exercise (no matter how erroneous) the number of ships will be multiplied by three to account for all three ports meaning some 360 ships were leaving for India annually. That is approximately the same amount of ships that docked in London (a city approaching 200,000 inhabitants) in the 16th century in a 6-month span from 1567 to 1568. Naturally the exact number of ships sailing to India is unknown, nor is the size of the ships known, but it is still interesting to try to put things into perspective, and irrespective of the simple and erroneous example, 120 ships from only one port is a lot. More evidence regarding trade to India comes from Pliny the elder. According to Howgego, “Pliny tells us that luxuries from India, China and Arabia cost the Empire 100 million sestertii every
year, and that India alone drained half that sum. In an important critique, Veyne has argued that these figures must have been drawn from records of customs duties levied on imports, that they ignore the quantity of goods exported from the Empire, and that they cannot be taken as an estimate of the drain (if any) of precious metal from the Empire…Thus Pliny’s figures do not represent the outflow of precious metal, but it is unreasonable to deny that any net outflow took place. The *Periplus* emphasizes the quantity of coin taken to Indian markets, and large numbers of Roman coins have been found there. The scale of trade was staggering, but it appears to have taken off only from the time of Augustus." Even though it is not precisely clear what Pliny was referring to, if Veyne is correct and it corresponds to the amount of money paid at customs for the import of goods, then the total value of the goods imported would be higher than 50 million as customs dues do not tax at 100%. The exact tax level seems to be unknown, but it would definitely raise the number significantly. A question posed by various authors regarding this ‘drain’ of money is how it must have affected the Roman economy. Some scholars, like Hammond, claim that export of coinage was significant such that it had to be curtailed and mention Vespasian’s reign as an attempt to slow or hinder the outflow of coinage. Considering that the Roman Empire just went through a civil war and Vespasian was attempting to sanitize the economy there is little point in using this as an example. However, another example is mentioned by Beigel who writes that under the reign of Hadrian there is also mention of an attempt to hinder the export of coinage. This fact is more telling, and it definitely does suggest that there was an outflow of precious metals, but how extensive it was is unclear. Furthermore, as the previous sections regarding the supply of precious metals have shown it is highly debatable if the outflow was so dangerous. That some sort of shifts in the economy of the Empire occurred during and after the reign of Hadrian is clear, and perhaps this is a part of it, but overall this aspect by itself should have caused little problems.

As an overall conclusion it should be clear how ‘extensive’ external trade was, and considering that most authors agree that external trade was ‘negligible’ regarding internal trade, it definitely lends credence to the immense internal trading power of the Roman Empire and its trade as a whole.
Finance & Banking

Introduction

The Roman financial intermediation system, as already mentioned in the section under ‘positive influences of velocity’, was comparable to the European agrarian economies of the 18th, and in some cases even of the 19th century. Since the sophistication of financial institutions is connected with economic growth, this is clearly an indication that the Roman Empire could have had vast potential. The better and more distributed these institutions are, the better those people who have ideas and potential - but not sufficient capital - can acquire the funds to further their plans. In his paper “Financial Intermediation in the Early Roman Empire” Peter Temin tries to prove that financial intermediation existed in the Roman Empire, alongside the extent of its sophistication, by looking at what type of debt and equity capital was possible for those who needed it. He displays a table (Table 9) which follows a top to bottom progression of possible sources of capital, and convincingly proves that the Roman Empire reached and included the Financial Intermediaries level in both the debt and equity capital aspects.

Table 9:

<table>
<thead>
<tr>
<th>Type</th>
<th>Debt Capital</th>
<th>Equity Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Sources</td>
<td>Loans from owners</td>
<td>Retained earnings</td>
</tr>
<tr>
<td>Informal External Sources</td>
<td>Loans from family and friends, trade credit, brokers</td>
<td>Investments by informed participants</td>
</tr>
<tr>
<td>Financial Intermediaries</td>
<td>Lending by financial institutions (banks)</td>
<td>Some joint-stock companies</td>
</tr>
<tr>
<td>Public Markets</td>
<td>Bond issues</td>
<td>Stock issues</td>
</tr>
</tbody>
</table>

Source: Adapted from Sirri and Tufano, 1995, 98.
Other authors come to similar conclusions: for example De Cecco (also in reference to velocity of circulation) writes that in “a world that knew no rapid transaction system, new coins reached the farthest corners of the Empire with surprising rapidity. And when there were discontinuities and interruptions, there seem to have been enough argentarii, nummularii, foeneratores, oppii, trapezitae, to regulate the velocity of circulation and reconcile demand and supply conditions. One should pause to reflect on the very number of words that were used to describe, in current Latin, financial functions and financial intermediaries. How did this system acquire the depth, width, and resiliency it obviously had reached by the second century after Christ?” Another example comes from Rostovtzeff, who writes that next to trade, industry and agriculture, the occupation of banker and private money lender played a significant role in business life. The credit system in the cities of the Empire was very developed. The prosperity of trade and industry and the growing number of landowners that lived in the cities required ever more capital to finance the creation or improvement of their enterprises. At the same time there were many ‘capitalists’ who owned a lot of money. As such, it comes as no surprise that money lending became a profitable business, not only for a banker but also for any rich person that was able to lend money. Proper banks, private and state owned, came into existence in the Empire. Beigel adds to this and mentions that the Romans had a strong banking sector with money exchange, credit and auction businesses.

As can be inferred from the sources already mentioned, there is definitely a plethora of scholars discussing and proving the sophistication of the financial intermediation of the Roman Empire, showing that credit was available from many types of sources, ranging from temples to ‘banks’ to private individuals, found in various areas (both rural and urban). “In both East and West bankers could be found in the market and harbour areas of some cities. Hints of how widespread bankers were and how they could touch the lives of many can be gleaned from the fact that Herodes Atticus was able to pay his father’s bequest to all Athenian citizens through the agency of banks (after deducting what the citizens owed to him)...The copious evidence from Egypt shows that individuals might routinely pay their taxes either direct to the public bank or through private banks, and that banks might be established even in villages.” This should make it clear that getting credit should not have posed too much of a problem, provided of course, that some kind of security for repayment could be given.
While some authors have ‘attacked’ the sophistication of the Roman system by claiming that being able to actually attain a loan was difficult without sufficient securities (especially land), this can hardly be seen as a ‘weakness’ of the Roman system. Even nowadays every bank will require some sort of security: no bank will loan out money without the knowledge that it can get some (mainly all) of its money back in one way or another. This is not to imply that this paper is making the claim that Roman banking is on a par with modern banking, though some authors, while trying to ‘disprove’ its sophistication, do actually compare the two directly. De Martino, for example, correctly mentions that banking during Roman times was not as we understand banking in our modern times. During the Principate the majority of ‘banking’ was conducted by private individuals, and not by large banking corporations as we have nowadays. Ultimately, it is also important to note that money-lending not only allowed for those people who needed money to have access to it, but that through direct transference between bankers, the actual usage of currency was not needed because it could be done purely through ‘accounting’. Drexhage, Konen, and Ruffing, mention that according to the latest research, it has been proven that the money-lending business certainly increased the money supply more than was assumed before. It is not clear how much by, but it should be clear that the money supply did not depend entirely on available coinage. The aim of this section, therefore, is to display how financial intermediation functioned, and what kind of banks (sources of capital) actually existed and how they conducted their business, in an effort to show that the Roman system was a form of free-market capitalism.

**Money-lending**

It seems that lending was generally considered the second best form of ‘investment’ after land, primarily because those people with a lot of wealth would often accrue great profits from their land and would then need to invest some of this wealth somewhere in the event that no lucrative land investment was available at that moment. These people did not let money lie idle; for this reason, the simplest and quickest investment was to loan money out to various people or cities, etc. A good example of this comes from Kloft, who mentions a ‘popular story’ from Roman times where the owner of three slaves gives each slave a part of his fortune while he goes on a trip, under the condition that each slave should optimize the usage of their part.
Two slaves managed to increase their wealth through trade, while the third hid his part and waited for his master’s return so that he could give his master the same initial amount. However, the master was angry that his slave had not at least given the money to some bankers, as he would have then received interest. Even though this is a ‘popular story’, it can nonetheless be regarded as a norm of the times. The idea of not letting money lie idle, rather making an effort to invest it, or at least receiving some interest from it, seems to be a very logical concept, at least in our modern times. As the example with the three slaves shows, this was also logical for the Romans; yet some authors, like Finley, disagree with this assessment of the Romans. Finley writes:

“When Pliny was sent to Bithynia in Asia Minor by the emperor Trajan, probably in A.D. 109 or 110, in order to sort out the financial disarray and extravagance of the affluent cities of the province, he reported (Epistles 10.54) that, having succeeded in collecting substantial sums owing to one city, probably Prusa, “I fear the money may lie idle, for the opportunity of buying property is non-existent, or nearly so, and people cannot be found who will borrow from the municipality, especially at the 9% which is the rate for private loans.” He proposed that the city councillors be compelled to borrow at some lower rate. Trajan promptly rejected the idea as “unjust”. Three things are to be noted. The first is the familiar trinity, cash on hand, land, money on loan. The second is that neither the city nor the emperor saw anything improper in allowing the money to lie idle. The third is the unavailability of land for purchase…It is not altogether clear how Pliny discovered that there was no land to be had. I suggest the answer is that he learned from the small-town gossip of any Mediterranean society, more particularly from the gossip among the very municipal aristocracy on whom he was prepared to impose loans.”

Finley, at least, seems to agree with the general assessment of Roman investment patterns by mentioning his ‘trinity’, where land is the primary source of investment, and money-lending the second. The problem, however, lies in his analysis of Pliny’s quote, where Finley claims that the Emperor and the city saw no problem with letting money lie idle. This is clearly not the case, as first of all, there had been no money until that point which could lie idle so the city or the Emperor could have hardly
worried about investing money that did not exist. Pliny had only managed to collect money, and once having collected it, he noted that he could not find suitable investment opportunities; otherwise he would not have said “I fear the money may lie idle”. Secondly, the Emperor did actually have a problem with the money lying idle, as the Emperor answered Pliny with the following letter: “I agree with you, my dear Pliny, that there seems to be no other method of facilitating the placing out of the public money than by lowering the interest; the measure of which you will determine according to the number of the borrowers. But to compel persons to receive it who are not disposed to do so, when possibly they themselves may have no opportunity of employing it, is by no means consistent with the justice of my government.”

While the Emperor most assuredly had a problem of ‘imposing’ loans upon people, he definitely understood that money should not lie idle and told Pliny, as Pliny had initially suggested, that the interest rate should be lowered in order to arouse more interest in the loans. Thirdly, and finally, the mere fact that there was a discussion between Pliny and the Emperor about possibly ‘imposing’ it upon individuals to take up loans clearly shows that letting money lie idle was considered wasteful; otherwise for what other reason would one consider forcing people to borrow money, if idle money is not a problem? In conclusion, Finley’s attempt to prove a Roman disregard for money lying idle can only be false. Temin, for example, explains that by the Emperor informing Pliny to lower the interest rates, shows the Romans had conceptualized a demand curve for loans and that the solution was one that was market-oriented, and not administrative. It also shows that the Romans understood that money lying around was money which was going to ultimately lose in value.

The Romans were more than willing to invest their money, and in fact, it appears that they were perturbed if they could find no good investment. Their motivation, not only for making a profit, but also for avoiding a loss, was very strong. In essence, there is a ‘loss’ if no use for money can be found, since if it lies idle in the long run, the money will lose in value, due to inflation, for example. This is not to forget that it is theoretically also a ‘loss’ if it is known that when money is invested a 5% interest can be gained, and one then makes a conscious decision not to do anything with it: this is a ‘lost’ opportunity to make a profit. Even though inflation will be examined in a later section, it has already been alluded to in this paper, and it has been proven to have existed; however, how much the Romans were actually ‘afraid’ of inflation is
unclear (at least before the 3rd century), and their primary motivation for investing was most probably so that they could make a profit, and not for fear of inflation.

As a general conclusion, it should be clear why the Romans loaned money so profusely: namely to be able to invest any former profit that had been accrued. Money-lending was a far easier and quicker investment form than any other since it could be set up quickly, and it did not involve much effort on the creditor’s behalf once the loan had been granted which other types of investments into trade or industry would have required. As to why investments in land were more ‘popular’, is due firstly to the relative security of land, and secondly, land was the most important source of wealth in the Empire. Trade and industry also definitely played a significant role, but it was still land that was required to produce any good. Even nowadays, in the most advanced western nations, land still holds a special ‘fascination’ for investors. In essence, Temin mentions that there was an extensive credit intermediation in the early Roman Empire. This intermediation may not have functioned exactly as we understand it today; however, it still functioned nonetheless. For example, deposit banks of the modern kind were not really common, and while people could easily make loans through these banking institutions, it was significantly harder to recover their funds. As such, the rich had to most probably keep more cash on hand. It would also seem that it was relatively easy to borrow widely in the economy since individuals, merchants, local governments, temples and private banks were all capable of loaning money.  

**Types of Money-lenders**

According to ten Brink, the various money-lenders can be placed into 5 different classes, who were involved either privately or professionally in the money and financial business.

1. Money-lenders of everyday life (small-scale); most probably spread over the urban and rural areas.
2. A middle group of speculators and businessmen.
3. Wealthy people from the “oligarchy”.
4. Those that aided the wealthy in managing their accounts and as financial aides. They were called *dispensatores* and were mainly slaves. Ten Brink, however, fails to
note that there were more types of financial aides and agents than these, for example:

“As a general rule, supervision of the master's holdings was entrusted to an entire hierarchy of financial agents working in both city and country, who carried out the wishes of their dominus and whom we know from inscriptions-procuratores, actores, dispensatores, cellarii, arcarii, and so forth.” Furthermore, institutors should also definitely be included in this list.

5. Those that worked professionally in the ‘money’ business and were recognised as such. In essence these were: argentarii, nummularii, coactores, and coactores argentarii.

It should be noted that the individuals in classes 1-3, especially those in the 2nd and 3rd classes were generally known as faeneratores, which can be inferred to mean ‘money-lenders’, if they conducted ‘enough’ money-lending. Some translations of the word actually claim it meant ‘usurers’, but this is incorrect. To these 5 classes pertaining to the money-lending of individuals, two more can be added which were not dependent so much upon only one person.

6. Institutional moneylenders, for example; temples, cities, etc.

7. The various ‘joint-stock companies’ (corporations) that existed in the Roman world. These were called societates publicanii.

**Private& Semi-Professional Bankers**

The vast majority of money-lenders in the Empire were private individuals, since anybody that had any additional capital and wished to lend it out, could easily do so. Ten Birk, to that regard, mentions that ‘banking’ could be conducted by anybody, be they professional or private. There were no (or very few) restrictions as to how, if, and to whom one could lend: all opportunities were open. The private individuals who loaned out money were known as faeneratores, and even though this could generally imply anyone who loaned money, it seems the term was usually used for those individuals who loaned out more ‘regularly’ and/or larger sums; in essence, ‘semi-professional’ money-lenders. However, it is important to remember that anybody could - and many Romans did - lend money out when they had no better form of investment at the time. As such, in terms of Temin’s sources of capital, the Roman Empire definitely had both the internal sources and the informal external
sources as a means for getting loans or investments from family, friends, or friends of friends. It is nearly impossible to know exactly how large, or what form most of these ‘lesser’ types of loans took, except that they existed and permeated all of society is clear. The focus in this section, therefore, is predominantly on the upper echelons (ten Brink’s 2\textsuperscript{nd} and 3\textsuperscript{rd} classes primarily), since their loans could be of very significant and substantial amounts, and enough written evidence still exists on the types of loans they conducted.

Kloft, for example, mentions that lending money for interest was a common aspect of Roman society, and that all rich people, especially the Emperor who was the biggest money lender, engaged in it. Beyond being the most powerful man in the Empire, the Emperor also happened to be the richest, and it was therefore easy for him to also be the largest money-lender. It is perhaps of use to mention that the Emperor and the State were two separate legal entities, and though this will be explained in more detail in a later section, it is sufficient to know that the Emperor had his own private wealth which was separate from the State’s wealth. Far too many authors, even in late antiquity, make the mistake of equating the Emperor’s private wealth with that of the State’s. There always existed a separation of what belonged to the Emperor and what belonged to the State, even though through the decades this distinction has become somewhat blurry. As such, when the Emperor lent money he did so out of his own pocket, and not from the State’s coffers: the Emperor (personally) was therefore the largest money-lender in the Empire.

The rich and affluent members of the senators and equestrians who similarly lent money profusely, stood the below the Emperor in rank. Even though wealth inequality will be examined later, it suffices to say for example, that in terms of concentration of personal income, Goldsmith calculated that approximately the top 3\% of the population earned around 23\% of the wealth. It then comes as no surprise that these individuals were also the largest money-lenders since they earned (and owned) so much money. To that effect, ten Brink mentions that it was exactly these upper classes who took over the job of money-lending for their own ‘kind’. In essence, the upper classes were the main source of credit for each other, simply because it was only their own peers who had sufficient funds they could loan from. Almost nobody else in the Empire had as much financial power as these individuals, and it should
therefore come as no surprise that an incredibly wealthy senator would not ask an argentarii (for example), who worked on a ‘bench’ in the Forum, for a loan. The argentarii would have never had the financial strength to gather a large loan with the ease and speed that a wealthy senator or equestrian could. To the same effect, the rich would not have used the argentarii to transfer money either, since the argentarii did not have the same connections or the wide-ranging interests that the upper classes did. Some members of the upper class, the Emperor at the fore-front, had business interests and investments in all regions of the Empire. They had multiple employees (who were both free and slaves) working for them in various regions of the Empire, and were therefore easily capable of transferring money internally (either physically or by booking it). They could also aid ‘friends’ and business contacts through the same means, so they never needed to use the argentarii, or any other ‘bank’ for that purpose. Howgego mentions something similar and writes that “societies create different financial structures in response to different needs. Part of the explanation for the lack of sophistication of Roman banking may be that banks were not for the most part used by the elite. Some of the elite, as has been noted, were able to draw on their own influence or widespread interests, or on those of their peers, to transfer money. The organization of Roman business cut across boundaries of rank and status, and thus may have gone some way to make such facilities available further down the social scale.”\(^{940}\) In general, Howgego clearly mentions the same ability of self-reliance within the upper class, but Howgego’s claim of a lack of sophistication of Roman banking due to this phenomenon is not entirely correct. Just because Roman (professional) banking did not have the financial power the upper classes had, does not mean that they were any less sophisticated - this will be explained in the section under professional bankers.

As ten Birk explains, the financiers in the upper echelons of society were the bankers of the upper classes, and they did all of the usual work an argentarii might have done; however, for larger amounts. They took loans in order to invest into ‘their’ regions for profit, but they also gave loans out, sometimes without the money actually belonging to them: in essence, this was some form of financial brokerage. Some took care of the business of creditors, etc. Another important job they conducted was the ability to transfer financial resources from one city to another, or into another part of the Empire, without the actual physical transportation of money. They were also
capable of making payments to third parties on account of their ‘clients’, and were also involved in the purchase and sale of debts. In essence, very much like what the ‘professional’ Roman bankers did. The main difference between the two, besides the financial size of the dealings, was that the rich financiers were more likely to have their interest rates enter the field of usury, since they were involved in far more riskier business than the professional bankers, and these investments were sometimes temporary or speculative. Even though interest rates were generally free to move as the market dictated, there was a maximum legal limit for ‘normal’ loans of 12%, and professional bankers rarely (or almost never) seem to go beyond this limit; however, there are various cases of the rich financiers going well beyond this level. This is not to say that the legal limit did not apply to these rich financiers, it most definitely did as well (as will be shown in a later section); however, they most probably felt safer from repercussions, due to their higher position in society, than professional bankers did, who were more dependent on the State’s goodwill. It is also important to note that the ‘worst’ cases of usury are generally attested for at the end of the Republic, and at the beginning of the Principate. This would suggest that in truth, the high levels of usury conducted by the rich financiers mainly cropped up in times of distress, and under normal circumstances were probably not a problem.

Financial Aides & Agents

Even though the upper classes were the largest ‘bankers’ with the strongest financial strength, in most cases they actually did little ‘hands-on’ work when it came to financial dealings. Considering the fact that some of the upper strata had over hundreds, or possibly even thousands of ‘employees’, be they slaves or free, meant that it would have been quite difficult for them to keep an account of everything solely on their own, even without knowing that the upper classes preferred to concern themselves with ‘politics’ rather than with actual business. This is not to signify that the upper classes were indifferent to making a profit, as they were most certainly interested in becoming richer; however, they appeared to leave this task in the capable hands of their ‘employees’, especially slaves. “As has been well-documented, slaves could play a vital role in the world of commerce and trade. Yet it was a contradictory role: they were by definition subordinates; but at the same time their active participation in economic activities often meant as a consequence that their role was
very similar to the master’s. While it must be acknowledged that this role equivalence lay within certain limits, it remains interesting all the same, particularly insofar as it reveals that a large slice of economic transactions were in actual fact conducted by slaves.\textsuperscript{943} It seems this slice was in “the proportion of almost 40%, as demonstrated by the corpus iuris”.\textsuperscript{944} Why a ‘preference’ existed for using slaves to conduct economic transactions, including the overall general questions relating to slavery, will be examined in a later section; for now it is sufficient to imagine the upper strata taking the form of a large ‘company’. Due to the fact that some rich senators had hundreds of employees (partially slaves, partially free), and that these employees were spread throughout the Empire and engaged in various ventures, obviously meant that these employees had to be stratified. Much like a multinational company, there were top managers (agents) in all locations, with sub-managers (sub-agents) beneath them, followed by various workers conducting a variety of functions. Remaining on the financial aspect of this ‘company’: it was necessary to have someone in every ‘major’ location who was versed in financial management, like for example, a procurator or an institutor (depending on the task in question). This individual might have had financial secretaries to aid with the work, like for example, dispensatores, tabularii, arcarii,\textsuperscript{945} etc., who conducted and focused on various financial dealings. These groupings would exist in every major location, and the same would apply for the ‘headquarters’ where the owner resided. In essence, due to the vast distances and the slowness of communication, many of the agents in these areas were ‘left to themselves’ and were relatively free in how they conducted their business: this meant that these agents were free to use and invest the money going through their hands without waiting for clearance from the real owner. This meant for example, that they could lend this money out as a banker would. On the other hand, it was also custom among these rich Romans (which Beigel calls ‘large capitalists’) to actually loan a part of their capital directly to slaves and freedmen, in order for them to conduct their business without this money becoming a peculium\textsuperscript{946} (a peculium is the slave’s private property). It was naturally also possible that a slave worked with his/her own peculium and loaned money from that. As such, a variety of possibilities were open to slaves and freedmen in these ‘management’ positions. It should be clear to the modern reader by now that slaves in the Roman Empire had a much larger variety of ‘privileges’ and ‘rights’ than, for example, U.S. slaves from the 19\textsuperscript{th} century did; however, as already mentioned, this will be explored later. For the moment, it
suffices to understand that individuals - free or non-free - who were working for a rich ‘capitalist’ were capable of acquiring credit ‘internally’ through their employer (or owner), that they were also able to lend money to third parties themselves, and they could even get a loan from a third party. In consideration of the fact that many slaves were owned by extremely wealthy individuals, this could have been regarded as an excellent security. In essence, many of the actions which will be later attributed to professional bankers, especially the *argentarii*, could also have been, and many in fact were, conducted by those employed by the upper strata.

**Professional Bankers**

Professional ‘bankers’, much like the *faeneratores*, were also private individuals who specialised in specific actions relating to banking. Large banking corporations as we know them today did not exist; the vast majority of banking was conducted by individuals (possibly with a few aides), though it was not unknown for bankers to join forces for a larger investment. The truly large investments, however, were conducted and financed by the *faeneratores*, not the bankers (as described in an earlier section). Even though this has led some scholars to believe that ‘banking’ was therefore not sophisticated, does not pay it any justice, as banking was just as, or even more, sophisticated than what the *faenerators* were capable of, albeit on a smaller scale.

There were three main classes of bankers in the Roman world during the Principate, and these were called *nummularii*, *argentarii* and *coactores*. Two other types are mentioned in sources, and these are *coactores argentarii* and *collectarii*. These two were of much ‘lesser’ importance. Firstly, *coactores argentarii* (as the name implies) corresponded to an individual conducting both tasks, and this was usually performed in areas where demand for banking was low; secondly, *collectarii* were also a combination - of *argentarii* and *nummularii* - but this only came into existence during the time of Constantine (4th century A.D.). In truth, it was the *argentarii* who most performed the actions that are closest to those of modern banking today: this will become more apparent after an in-depth examination of the different types of bankers. It is important to note that with respect to how many bankers existed, and the extent to which they were spread out in the Empire, it should be clear that bankers and banks “are found at Rome as early as coinage, but they did not appear everywhere at the same time. In the East banks were widespread before the arrival of the Romans. In the West, as far as we can judge from inscriptions, banks were established later in the
provinces than in Rome and Italy. No inscriptions record a banker in any western province before the first century A.D. Such arguments from silence have little force in absolute terms, but the pattern of banks developing later in the western provinces than in Italy is plausible. It is not hard to see that the extent of the promotion of the use of coinage by banks depended upon how widely banks were available. If banks were more widespread in the first century A.D. than earlier, the result is likely to have been an increase in the use of coinage.”

This also demonstrates that a certain degree of monetization and sophistication is needed and/or goes hand in hand with the existence of professional bankers. It can be inferred from the quote above, that during the Principate bankers were to be found everywhere in the Empire - even in the western provinces - which until then had been the least ‘sophisticated’, and as such the importance of professional bankers should be clear.

**Nummularii**

*Nummularii* came into existence somewhere around the last quarter of the 2nd century BC. Their main job focused on the exchange of coinage, and checking coins to see if they were genuine (metal content). “Their emergence as the people responsible for testing coins occurred in response to the growing number of plated coins put into circulation by forgers from the second century B.C. onwards.” As such, they came to be important for larger transactions, especially during the Principate, as a result of counterfeits. To that extent they were under ‘state control’, as the state would want to control the exchange rates between coins (as mentioned in a previous section). In essence, the *nummularii* were capable of keeping track of market conditions regarding coinage (most probably thereby informing the State), and by getting rid of forgeries, they were able to establish public trust in the coinage. From 100-140 AD, the *nummularii* also began to accept deposits and to grant credit, which until then, the *argentarii* had performed (and still continued to do so). Their greatest use was ultimately in keeping an eye on the money supply and the usage thereof, and making sure that the population accepted the coins.

**Coactores**

One of the first instances in which the *Coactores* are mentioned is by Cato, which signifies that they came into existence roughly during the same period as the *nummularii*. Unlike the *nummularii*, however, *coactores* were not under ‘state
control’. Their job was to collect money. For example, they collected debts instead of the creditor having to do this, and as such they usually worked for/together with the argentarii. The commission the coactores usually earned was one percent of the value of the ‘debt’ being collected, and this was paid for by the debtor. Another area where they were active, was in money collection during/after auctions. The process was usually carried out along the following lines: the argentarius paid the forani (the seller) and the coactor then had to collect the money from the circumforani (the buyers) that had bought the good at the auction. Ten Brink mentions that the fact that the coactores ‘only’ received a 1% commission is a sign that there must have been a large volume of trade through the auctions, and/or it could actually be possible that for transactions that were larger or more complicated, higher commissions were charged. Whatever the case may be, there were certainly enough coactores in the cities to suggest that trade was sufficient, and that their job was required to make transactions easier.

Argentarii

Unlike the coactores and the nummularii (at least until 100-140 A.D.), the argentarii conducted a variety of functions that mostly resemble ‘banking’ as we know it. Before an examination of these various functions is made, it should be reiterated, just as ten Brink mentions, that the argentarii in the 2nd and 1st century BC seemed to lose their ‘social’ status and their financial strength. Senators and equines ceased (or lessened in) using the services of the argentarii. At the same time, however, they had spread throughout the cities of Italy where money and money usage had barely existed previously. By crediting trade, the argentarii encouraged commercial development, and a new net of professional bankers came into existence in Italy. By doing this, they managed a diffusion of the growing money supply into almost all of the sectors of the population and they were most certainly an important part of the monetization of the economy of Italy. As such, the argentarii mainly worked on a local level, and were not usually very rich individuals. They were not ‘large’ bankers, and mainly conducted their business with the middle to lower classes (according to wealth). Large loans were usually beyond their abilities.
The argentarii could conduct some 15 functions. They are the following, and show that the “argentarius thus did almost the same sort of business as a modern banker”:

1. Coin inspections.

2. Purchase and sale of foreign and exchange of local coinage, where the argentarii took a provision; Originally, at least until the 2nd century B.C., the job of the argentarii was to exchange foreign currencies, whereby they earned a small amount of money called collybus (agio), and while doing so, they naturally also checked the coins for their authenticity. With time, however, they expanded their business.

3. Granting of loans with interest, and accepting deposits, either with or without interest.

4. Payment to third persons by order of the client; Argentarii often received money from their clients, and this “money might be deposited by the owner merely to save himself the trouble of keeping it and making payments, and in this case it was called depositum; the argentarius then paid no interest, and the money was called vacua pecunia. When a payment was to be made, the owner either told the argentarius personally or he drew a cheque. Or the money was deposited on condition of the argentarius paying interest; in this case the money was called creditum and the argentarius might of course employ the money himself in any lucrative manner.” The argentarii often made the necessary payments for their clients (man per mensam). This payment to third persons was conducted by order of the customer, which could have been either a verbal or a written order. For specific business transactions the deposited money was used for payment orders (relegatio), where money could be transferred, often just by booking the amount. In essence, the ability to accept deposits, grant interest on deposits, and thereby being allowed to invest or loan this money out further, combined with the ability to conduct payments directly to third parties which often did not involve actual physical money transfers – all of this in the name of the client - is definitely a very strong indication of significant sophistication. The problem arises that not all authors were convinced of
this, and for example Brüge and Finley did not believe that deposits received interest. Finley, for example, claims that the Roman world “was a world which never created fiduciary money in any form, or negotiable instruments. Money was hard coin, mostly silver, and a fair amount of that was hoarded, in strong-boxes, in the ground, often in banks as non-interest bearing deposits.” Beyond Finley’s obvious mistake about money being mostly silver, and that a fair amount was hoarded (as has been shown in the previous section about the money supply), taking Bogaert’s example, ten Brink shows that there must have been interest on deposits, as the bankers often did not use their own money for granting credit. They must have then been “working” with the deposited money. Furthermore, as the initial quote in this 4th banking function has shown, there were two types of deposits, where one gave interest and the other did not, and both have specific names given to them. This heavily suggests that there were interest-granting deposits, and most probably Brüge and Finley focused too much on the non-interest type of deposits. In addition to this, if one takes into account that interest-bearing deposits existed, Finley’s quote actually shows that money was not hoarded, since he writes that it “was hoarded, in strong boxes...often in banks”. Therefore, if money was ‘often hoarded’ in banks, but sufficient deposits were interest-bearing, this can hardly be seen as hoarding. With regard to the ability to make payments to other bankers in the name of the client without the physical transfer of coins by simply ‘booking’ the values, this accounting practice will be explored in a subsequent section in greater detail.

5. Issuing and accepting some form of a bill of exchange;
“In later times when the Romans became acquainted with the Greek custom of using bills of exchange, the Roman argentarii, e. g., received sums of money which had to be paid at Athens, and then drew a bill payable at Athens by some banker in that city. This mode of transacting business is likewise called permutatio...and rendered it necessary for the argentarii to be acquainted with the current value of the same coin in different places and at different times.” With the expansion of Roman dominion and the presence of Roman citizens in foreign locations and the provinces, and especially once the Roman currency was the ‘official’ and all other currencies were pegged to it, money could be easily transferred through letters of credit via bankers, which made it unnecessary to waste time and resources delivering money physically oneself. How these ‘bills’ actually looked does not seem to be clear; however, the
fact that they existed, and that by these means bankers were able to transfer money without the physical exchange of coins, is more clear; yet once again, there are scholars who disagree. For example, Andreau claims that the Roman bankers did not understand payment in the form of cheques, and that a system of compensation between the banks in various cities did not seem to exist, yet the co-working of various bankers in a city, in the form of mutual loans, was very possible. Ten Brink convincingly mentions that dating back to Hellenic days, banking had become advanced enough that various financial instruments were available. For example, a written instruction sent directly to a bank which allowed for the transfer of money from one account to another existed, alongside payment using cheques. In essence then, if Greece had this sophistication during Hellenic times, why would it cease to exist after the Romans had conquered it, especially considering the fact that the Romans were excellent at copying and adapting to ‘new ideas’? In consideration of Greece during the Roman reign, Beigel mentions the case of Cicero, who through the usage of a kind of IOU, was able to arrange that his son gain access to money in Athens. Cicero’s son was going to study in Athens, so Cicero got into contact with a Roman from Athens who was in Rome at the time, and who had loaned out money to someone in Athens. Cicero ‘bought’ this debt, and the debtor in Athens was informed to give the money to Cicero’s son in Athens. This technique obviously required people who had connections in the respective locations, but it shows that it was possible, and even though it occurred during the end of the Republic, and that it is generally accepted that the Principate became even more sophisticated, why should such techniques cease to exist, or for that matter, why should they have not developed further? Cicero’s transaction is essentially a form of a bill of exchange, as Howgego explains: “At its simplest the bill of exchange was an IOU which could be purchased in one place and exchanged for cash from a third party in another place.” It is important to note that Roman sophistication did not end here: as Beigel mentions, it was possible to attain a ‘bank note’ from the local argentarius which was to be given to the argentarius belonging to a foreign location. This way the action would not require any actual money transfers. Beigel, however, mentions that these ‘bank notes’ were not truly negotiable instruments as they were often very specialised in specific bank to bank instructions; however, the question here is not so much if the bank notes were negotiable, rather if transfers could be conducted without the physical movement of money: the answer is clearly that they could be. Debts,
however, as Cicero’s case shows, were definitely negotiable: otherwise he would not have been able to purchase the debt. As a last piece of information, Howgego’s quote should be examined where he writes that in “the Roman world, outside of Egypt, there are no traces of affiliations between banks in different places. Unless this is simply a result of defective information for the other provinces, this means that, in default of any clearing system, banks could not be used to transfer funds from one place to another. Perhaps even more important, although the benefits of debts might be transferred from one person to another, there were no bills of exchange and no system of negotiable paper. Furthermore, ‘cheques’, in the sense of orders addressed by payers to their bankers but given to the payee, are unknown outside Egypt, except for a particular form arising out of Jewish law…Even in Egypt cheques relied upon the trust of the payee (there was no relevant legislation), and there is no evidence that cheques could be endorsed so as to become negotiable.”

Howgego’s first point which relates to the fact that no traces of affiliations between banks outside of Egypt existed, has already proven not to be entirely true when examined in light of the banking situation in Greece. Furthermore, as Beigel, and DeMartino have shown, affiliations between banks in Italy also existed (and beyond as well, as in the case of Cicero). Secondly, Howgego mentions that cheques were known in Egypt, and were also part of Jewish law, which would mean that they must have also existed to some extent wherever there were large numbers of Jews, like for example in Judaea, Syria, etc. As for other parts of the Empire, or at least for Italy, Durrent, Simon and Schuster claim that cheques existed and that they were called praescriptiones. The overall conclusion to this conundrum regarding bills of exchange, cheques, etc., seems to be that at least Greece, Italy, and Egypt must have been capable of using them. This comes as no coincidence, as these regions, and especially Italy and Egypt, were by far the most monetized regions of the Empire and they were also the most financially ‘sophisticated’. The question, therefore, is how far these ‘negotiable instruments’ (in most cases it seems they were not truly negotiable) were used by the rest of the Empire? This question is hard to answer, since no (or little) evidence has been found to that effect. Generally, however, if these afore-mentioned regions were capable of using these instruments and transferring money by ‘bank notes’, not only within a province, but also between them, it is not hard to imagine that at least the same would apply to all of the other provinces which were more sophisticated or in the proximity of these locations. Ultimately, one should not forget that even if the
existence and usage of these types of instruments in the entire Empire was not very strong, it does not mean that a ‘weakness’ in sophistication existed, because first of all, there were other ways to transfer money non-physically, as the rich upper strata or the publicani could do this using their wealth, size, and connections \(^983\); secondly, the most important fact is that the argentarii catered to the lower and middle classes: on average, how many of these individuals would have needed to transfer money from one province to another? It is very likely that a significant amount would have needed to transfer money within a city, or between neighbouring cities within one province – the fact that this was possible has already been ascertained - but to gauge how many lower-middle class people, on average, needed to send money to other provinces is not very clear, and most probably not very many did. Even today in modernity, how often does the average lower-middle class person actually send money to another country, or need money in a different country? \(^984\) The answer is that most probably not so often, as the majority of purchases and investments will be conducted in the home country, and yet today we live in an age of tremendous ease of transportation (in comparison to the Roman Empire) and credit/debit cards. If in modern times the ‘same type’ of classes rarely need to do this (excepting the occasional vacation), why should there be a great demand for these instruments from these classes during antiquity? One can certainly rest assured that the traders from this class who often travelled, and who might have needed such instruments between provinces, had a sufficient number and variety of connections amongst the argentarii in the various cities on their routes to make this possible. As such, as an overall conclusion, there must have definitely been some form of a bill of exchange, cheque, bank note, etc. that could be used between different banks, cities, and provinces, at least in terms of demand for such an instrument for the classes using the argentarii.

6. Vouching for clients.

7. Entering into a debt commitment, as the client’s security, with a third party.

8. Taking over a debt commitment for the client;
From the 2\(^{nd}\) century BC the argentarii began the practice of receptum. This was an obligation which the banker took for his client. It was a payment that the client owed to a third party at a certain point in time, and the banker would then pay it instead, in
the name of the client. This function gave the client more freedom as he/she would not need to be present for the eventual transaction, which naturally made transactions much easier and quicker. Furthermore, the promise of payment by the banker acted as a kind of security for the third party, which made it easier for the client to get a loan from the third party. The banker could also mediate between the client (who wished to get a loan) and the third party (money-lender), as this essentially opened up new credit opportunities for the client.

9. The auction business;
As already mentioned in the coactores section, the argentarii were involved in auctions commencing in the 2nd century B.C. They would often credit the purchaser of the good which had been sold at the auction, and through this intermediary activity on the sale of the good, they created short-term liquidity and were thereby capable of aiding business and trade through their activity. According to ten Brink who cites Andreau, the emergence of auction credit is a sign of a triple growth phenomenon:

a. Growth of total credit volume, especially the credit for trade/commerce.
b. Increase of the number of transactions where the trader was involved.
c. Increase of the transactions in the areas of real estate (land and buildings), since the main participants at auctions were landowners and traders.

10. The societates business;
A societates is “a contractual union of a group formed to promote a common purpose” and societates “are formed either as universal partnerships [i.e., concerning all the property of the partners], or as partnerships for a specific business or tax-farming for a tax or for a single event.” While the aspect of tax-farming (among others) was conducted by the publicani, in essence, the argentarii were able to form two main ‘types’ of societates business. The first was in combination with a ‘client’, who invested his capital, while the banker invested his business knowledge and connections, as well as effort and time (or vice versa). The profit was split according to some pre-determined percentage. The second type involved a societates between argentarii: in essence, a form of a banking co-operation. These were not large trans-regional banking corporations as we know them today; nonetheless, by various bankers joining forces larger investments could be conducted.
It is important to note that these ‘societates argentarii’ were not an autonomous subject with rights and duties. The legal stipulations for argentarii within a societates, were that a socius (member) was liable for others within his societates. In return, a member received certain privileges, like for example, being sued at the expense of their deposit accounts only. Later, under Justinian, more privileges were added (however this falls outside of the time-span of this paper). This is not to say that bankers could not conduct business together without forming a societates. Getting together for the completion of a certain banking business could actually be done without contracts or a special legal writ. However, when two or more bankers worked together special legal regulations applied, as already mentioned (where all were liable only on their deposit accounts); however, if it there was an outstanding debt and one argentarius was repaid the full amount, then the matter was considered legally settled. To a large extent, however, it is still not fully clear how this type of societates functioned, since the sources seem to suggest that a societates of argentarii was handled slightly differently than a ‘normal’ societates would have been. An interesting consideration to make regarding this type of societates, is that it is precisely they who might have actually been capable of using bills of exchange, as one argentarii societates could, for example, have theoretically had members in various key cities on important key trade routes. These members would have then had no problems or qualms about accepting some form of a bill of exchange, cheques, bank notes, etc., from fellow members located in different cities, especially considering that they shared the profit of the societates according to some percentage, and that they were legally allowed to accept and conduct investments in the name of the entire societates. If this is how it was actually carried out is unclear, but most sources do discuss a ‘net’ of bankers associated through connection, especially in richer provinces like Italy, Egypt, etc., so it is maybe not too far from the truth.

11. Something akin to the job of a notary; Since the books of the argentarii were often used as proof in legal courts, information written down by an argentarii had some legal value. For example, during public auctions - besides crediting potential buyers - they would actually also record the item, the price achieved, and name of persons involved in the purchase of the object. Considering the fact that the state had a variety of taxes, for example a 1% on sale of goods, this was one way of keeping track of things. This is not to imply
that the *argentarii* were notaries, since the Roman Empire definitely had their own version of notaries called *notarius*\(^998\) at one point, but that the books of the *argentarii* could, to some extent, also be used for such purposes.

12. Working as brokers for various sales/purchases outside the auction business;\(^999\) The *argentarii* created short-term liquidity and thereby made transactions with goods much easier. They worked as mediators between landowners and peasants/farmers on the one hand, and wholesalers, craftsmen and retailers on the other hand.\(^1000\)

13. Account management, in essence ‘wealth management’ for clients;\(^1001\) By having clients deposit money with them, and often paying for the clients directly from these deposits, the *argentarii* became very adept at managing not only their own affairs, but also the affairs of their clients, at least when it came to accounting and finance. As such, for some clients, it became more convenient to let the *argentarii* ‘concern’ themselves about all matters relating to accounting, interest, etc., than to do this themselves. To that extent, the *argentarii* became very good at managing the fortunes of their clients.\(^1002\) This way the client could focus completely on his/her job and leave ‘money-matters’ to the *argentarii*, who were most probably more experienced in those matters.

14. Investing outside of ‘typical’ financial deals;
The *argentarii* did not only conduct banking business but ‘regular’ business as well, as for example, sea transport; there is evidence of *argentarii* equipping trade ships in their own name, and making large profits.\(^1003\) The only question is at what point the *argentarius* then ceases to be an *argentarius*, for if an *argentarius* begins to focus too much on ‘non-financial’ investments, outlined in this entire section, in the long run, the *argentarius* will cease being a professional banker. Most probably some *argentarii* who had made enough personal profit began to invest this money, for example, in land, trade, etc., and thereby ceased being ‘professional bankers’. A possible example of this is the grandfather of Augustus who is said to have been an *argentarius*, but who then rose to the rank of Equestrian, and thus ceased being an *argentarius*.\(^1004\) To cease being a professional banker would probably require a significant ‘shift’ in the means of earning money, and it would most probably, in the first instance, raise the person into the ‘ranks’ of the *faeneratores*; how the process
actually unfolded is not clear, and by beginning to compare various ‘ranking’ methods would be like comparing apples to oranges.

15. Obligation of purchasing newly coined money from the mint, and circulating it.  

During the Principate, the argentarii were obligated to purchase newly minted coins from the state, in order for this money to be allowed to circulate through the economy. This was called solidorom venditio.

Judging from the 15 functions that an argentarius could conduct, should make it clear how sophisticated professional bankers could be, but one question still remains that needs to be answered, and this is whether the argentarii worked for the state or not. Scholars seem to be split on this question, for example ten Brink, citing Andreau, mentions that the argentarii were largely independent from the state. The state did not grant any monopolies, or concessions, and it did not use them for the diffusion of state coinage, the depositing of public money, or for public credits. The problem with this idea is that firstly, at least according to function 15, the argentarii did diffuse state coinage, and secondly, Beigel mentions that one sign of state control was that the argentarii had to purchase the right to use certain locations (usually at the forum) for their business, which can technically be called a ‘concession’ since theoretically, if the state has some sort of problem with an individual it could deny them the use of the location. The answer to this conundrum is that the argentarii did not work for the state, and that they had a weaker connection to it than the nummularii, nonetheless there were still were ‘state controls’ which they had to abide to. Todd and Barry, for example, explain it best and write that “Rome also had an extremely active class of operators, who have traditionally gone under the name of ‘bankers’ (with due acknowledgment of the clearly different role of modern banking), whose activity the state controlled by means of some very precise regulations regarding bookkeeping, interest rates, registers, etc. However, these ‘bankers’ did not have, as far as is known, the status of ‘interlocutors’ privileged by state authority.”

**Institutional Moneylenders & Public Banks**

Even though the vast majority of lenders in the economic system were private individuals, some institutional lenders certainly existed, even in the form of
institutional banks. This means that organisations existed which could take care of lending, or other forms of money business, without being dependent on only ‘one’ main person. Anybody wishing to deposit or borrow money from these institutions was secure in the knowledge that their financial dealings be accounted for as long as the organisation existed. Three main examples of such institutions were the ‘public’ banks, cities, and temples. In many cases the ‘public banks’ and cities could have been perceived as one and the same thing, but this was not entirely the case, although a strong connection existed between the two, and in some parts of the Empire it is hard to differentiate between them.

According to Drexhage, Konen, and Ruffing the first type of public banks were individuals who were granted concessions, where they received a monopoly on the exchange of coins in a city. A second type was an institution that was run by magistrates where the state and its organs could conduct their business through these banks. ‘Public banks’, as in the meaning of the word, only really existed in the eastern half of the Empire; the West, however, had its own forms of conducting this business, where various specialists worked in the fields of credit and deposit management for the state, province, or for individual cities. The western half, according to Beigel, was more akin to this private system, since in Italy, more than in the provinces, the argentarii (or other private financiers) mediated in the credit business; furthermore, for example, the Italian municipalities were far richer (on average, and especially at the beginning of the Principate) than the ones in the provinces. According to Beigel, the city administration used the argentarius or the Roman ‘banker’ to both pay and receive its money, which makes it clear that the Romans had regular access to, and often used, banking connections. For example, the various lessees sent their lease payments to the treasury via these ‘bankers’, and likewise, the city payments for any contractors also went via the ‘bankers’. Beigel has enough information on this to show that a strong banking connection did exist, and it can easily be proven by the various accounts which the argentarii kept. As the western half was generally influenced more by Italy than the East, it is not hard to imagine that the entire western half was similar to Italy and tended to use the services of private individuals more. This does not, however, mean that the West had absolutely no form of a public bank. The cities themselves, in both the East and the West, could be considered as such (to a certain extent); for example, Kloft mentions
that most cities had (and in essence they were) their own public banks which could conduct a variety of businesses in the city, these being: accepting deposits, the exchange of money, the granting of credit, consultation and aid for purchases or sales, transfers and payment from personal accounts.\textsuperscript{1013}

However, making a general assessment like this for the East and West confuses the matter. As already shown for the West, the western cities would have used private bankers for payment from personal accounts, but the eastern cities might have done this through their ‘public banks’; on the other hand, both eastern and western cities were able to grant or accept loans. For example, when Pliny was in Bithynia (Asia Minor) looking for borrowers so that the city’s money did not lie idle, he was essentially working through the city’s ‘public bank’. Another example comes from ten Brink, who writes that towards the end of the Republic and the beginning of the Principate, many of the provincial cities were in close contact with private financiers who often offered their advice, and the cities also loaned money from them. This definitely applied to the cities of Asia Minor and Greece. However, the case was quite the opposite in Italy during this period: the cities rarely needed loans from financiers, in fact, they loaned out money to the financiers. For example, Cicero owed money to the city of Arpinum.\textsuperscript{1014}

It is not so clear to what extent, and whether at all, eastern or western cities conducted other functions. However, there is another clear disparity between the two types of cities: the ‘institution’ of the city \textit{kalendarium}. The majority of the city \textit{kalendarium} have been accounted for in the western half of the Roman Empire, for example, the headquarters of the \textit{kalendarium} administration outside of Italy, was found in Africa, Gaul and Spain (as far as is known). On the other hand, there does not seem to be proof of the existence of a \textit{kalendarium} in the east of the Empire.\textsuperscript{1015}

\textit{A kalendarium} was essentially the management of money which was donated or earned from a variety of sources, and which was then loaned out, so that the interest accrued was used for a variety of functions without the principal amount ever being touched. The Roman municipalities often had great wealth accrued from taxes, dues, inheritances, and ample donations received from the rich classes, even the emperors occasionally donated something to the \textit{kalendarium}. As such, the cities were able to
hold many public feasts, games, etc. Additionally, there were naturally also regular city expenditures to be taken into account, for example, the construction and maintenance of public buildings and roads, and the maintenance of sufficient supplies of oil and grain – this was in order to combat times of poor harvest (be it by controlling the price or the actual number of goods). The initial capital prepared for these expenditures was usually invested by liens on real estate, plots, and houses. In general, it appears that the Romans attempted to only use the interest accrued from capital for the various expenditures, and not the actual initial base capital itself. The administration in charge of the *kalendarium* was called the *arca kalendarii*, and they were both separate from the underlying city fortunes.\(^\text{1016}\) An example of how the *kalendarium* functioned can be inferred from the donation of C. Titius Valentinus, who donated one million sesterces to his city of Pisaurum. The interest accrued from 400,000 sesterces was allocated for a public feast which was to be held on his son’s birthdays, and the interest accrued from the 600,000 sesterces was allocated towards gladiatorial games which were to be held every five years. This donation was kept separate from the other monies of the city, and it was placed in a special *kalendarium pecuniae Valentini*, which was separately managed. The curator of this *kalendarium* was a certain C. Muteius.\(^\text{1017}\) The investments, interest and administration of all monies in the *kalendarium* were initially regulated by municipal regulations, and then eventually according to the law. Essentially, each investment formed an entire whole which was kept separate from any other investment: that is why in the example above, that particular *kalendarium* was called *Valentini*, according to the last name of the donor.\(^\text{1018}\) It is important to note that the capital in the *kalendarium* was to be used exclusively for the purposes for which it was intended; the purpose could only be changed through an extensive legal procedure. In general, the wishes of the donor, or the purpose that this money was invested for, were respected.\(^\text{1019}\)

It is interesting to note that *kalendarium* curators are only mainly found in the western part of the Empire, and that there does not seem to be any mention of *kalendarium* in the entire East. Beigel believes it is not completely impossible that the East had its own type of *kalendarium*, except that it was most probably managed by the *curator reipublicae*. The same rules would have applied for these curators as for the *kalendarium* curators.\(^\text{1020}\) In essence, the eastern half of the Empire would have conducted these functions in some other way, possibly even using their ‘public
banks’, as it is hard to imagine that eastern cities did not receive donations or incur expenses. For some eastern provinces, like Egypt, this would not be hard to imagine, as a true ‘public bank’ (according to the definition) is only really attested for in the form of the Egyptian public banks.\textsuperscript{1021} The public banks in Egypt were called \textit{demosiai trapezai} through which tax-payment was conducted.\textsuperscript{1022} Kloft mentions that this Egyptian form of a central bank, with the main banks located in the cities and branches located in the towns, was used to collect taxes, manage accounts of the tax collectors, keep documents, take care of deposits and disbursements, give loans, and conduct money exchange. The entire business aspect was carried out and regulated according to the wishes of the imperial finances.\textsuperscript{1023}

The extent to which the concept of ‘public banking’ differed across the Roman Empire should now be evident, and for this reason it is difficult to formulate and provide a general explanation of how it functioned. Nonetheless, an attempt at this would show that generally, the western half appeared to be more oriented towards the services of private individuals and not those of public banks, and the East was more geared towards public banks (in relative terms). However, one should not forget that in both halves of the Empire, both types of banks existed, and even with regard to Egypt, which had the strongest public banking system, private bankers are attested for. However, only the West seemed to have the institution of a \textit{kalendarium} which is clearly a public system. As already mentioned, the western \textit{kalendarium} was most probably conducted within eastern ‘public banks’, and as such it was not given a special ‘status’ in the East, since in the West, where public banking was weaker, such an institution was given its own special meaning. Of course the \textit{kalendarium} was essentially still a part of a city’s finances - even though the monies were kept separate - and in connection with that, cities throughout the entire Empire could be public moneylenders (how much they were actually ‘banks’ is questionable and depends on the location of the city). In truth, even this split into ‘west’ and ‘east’ is not entirely correct, as various provinces had unique solutions and unique public financing systems. As already mentioned, Egypt was the only province with a truly public banking system in the form that they exist today, with one central bank, and branches throughout the entire province. No other eastern province can attest to something like this, and yet the financial structuring in the eastern provinces definitely bore more of a resemblance to a ‘public banking’ system than that in the West. One should not
forget that after conquering a nation, the Romans generally adopted and adapted to the underlying conditions already present as best as possible. They rarely made great changes, especially in the East. The East had already reached high levels of sophistication and development before the Romans conquered it, and as such it should be no surprise that the provinces in these areas would still, by-and-large, have the same systems which were previously in place (with some modifications). The eastern systems, unlike the Roman systems, were generally much more oriented towards a public system, while the Romans were oriented more towards the individual private system. This is also why the western provinces were very ‘Romanized’. Unlike the East, the West had not been as sophisticated; for this reason, after conquering any western provinces, instead of adopting and adapting to the systems already in place, the Romans imposed their own system. However, differences existed in the West too, for example the institution of the *alimenta* is only attested for in Italy and nowhere else.

Even though the *alimenta* will be examined in greater detail in a later section, it was a system introduced by Trajan (and probably conceived by Nerva) where a “large sum of money was set aside by the emperor—how much is unknown—for the maintenance of poorer boys (and fewer girls), perhaps to the ages of eighteen and fourteen, respectively. The money was, however, not handed over to the local authorities directly but was siphoned to them through interest payments, of about five per cent, made by larger landowners on loans they took from the original fund of about eight per cent of the value of the charged holdings. The scheme was complex, involving considerable estimation of value, and was in perpetuity, so far as we know, though no regulations could have prevented economic failure and individual defaults. Altogether forty-nine towns are today known to have been involved in the scheme, nearly three quarters of them in the four central regions of Italy. Although the evidence is entirely epigraphic and therefore subject to chance, it is now virtually certain that the scheme never reached all the towns of Italy.”

It is important to note that the successors of Trajan improved this system even further, but irrespective of this, the loans were not systemized enough to be termed a state bank. However considering that sufficient towns were involved in this scheme, and that technically, it was run similarly to the *kalendarium* where individuals borrowed money from cities
so that children could be provided for from the interest accrued, it was definitely some form of a public money-lending system.

As a general conclusion, the vast complexity of the Roman financial system should be evident by now. In order to properly answer the question of public banks and public money-lending, an in-depth examination of each province would be required to see what would, and what would not, have been possible in terms of public banking; however, this falls outside the scope of this paper. At this point, it is only important to be aware that public banking and especially public money-lending definitely existed and were often used to great effect, and that the eastern half of the Empire generally tended to use it more, at least according to the definition of ‘public banking’ known today. There was, however, no overriding, empire-encompassing public state bank, all the public banks that existed tended to be localized in the form of individual cities. This meant that the majority of the investments and financial functions were conducted by the cities within their municipalities and rarely outside of them. The only forms of public banks that went beyond municipalities are attested for in Egypt, and the only form of a supra-municipal public lending system was the *alimenta* in Italy. To add yet another angle to this whole concept, is the actual status of the state in terms of a public banking, or moneylending system which will be explored in the following section.

**A possible Roman State Bank**

The cities, even though part of the ‘state’ of the Roman Empire, were technically not the actual ‘state’ itself. As already explained in the previous section, each city took care of its own finances, and as such each had its own public city ‘bank’ (whatever the type) with the sole exception being Egypt. According to Rostovzteff, this would have been the exact intention of the emperors’ policies, and the goal of the Roman Empire. Beginning with the first emperor, Augustus, who focused heavily on the expansion and the strengthening of the cities in the Empire, this process was to be continued by all subsequent emperors. In essence, Augustus and his successors wished to create as many ‘city-states’ as possible, in order for the Roman Empire to become a collection of self administrating cities (municipalities), with the city of Rome as the ‘ruler’. As such, many villages, towns and temple territories became new cities, and additionally new cities were also founded. The process of Roman urbanisation has already been
explored in a previous section in greater detail, but ultimately, with the exception of Egypt, the Empire was run by its cities. For this reason, the state bureaucracy was very small, irrespective of the fact that during the Principate it actually increased in size. There was no need for an extremely large bureaucracy, simply because the cities took care of most of their own affairs. For example, ten Brink, citing Hopkins, mentions the comparison between Roman administration and Chinese administration of the Han Empire (a contemporary of the time), and discovered for the 2nd century AD that in the Roman Empire, a Roman elite official was ‘responsible’ for 350,000 to 400,000 people, while in China this relation was 1:15,000. The state bureaucracy will not be examined in detail, but this should make it evident just how much the Roman state let the cities run their own affairs. From Augustus onwards the cities also collected the state taxes for their own area, and although taxation will also be explored in a later section, it is sufficient to know that the majority of the empire-wide taxes actually went to the city of Rome and the ‘state’ of Rome, and that the individual cities had to acquire their income from various local taxes, dues, donations, etc. In the most simplistic terms, the state taxes went towards maintaining the city of Rome, the army/navy, state bureaucracy and the construction/repair of the main highways. Whatever else each city in the Empire might have needed, it had to acquire by itself. This is one of the main reasons why the cities often borrowed or lent out money as they had to take special care of their own finances because the Roman state was not involved in the self-administration of each city to such a great extent. This is also the reason why each city had its own city ‘public’ bank, and why for many scholars, the Roman state did not have a national state bank. This, however, is not entirely correct. The Roman state may not have had a central state bank as they are known today; nonetheless, it had its own form which was more than sufficient for its needs.

At the onset it is important to note, and various scholars such as Temin, for example, have mentioned that the Roman Empire did not borrow money, rather, it ran on cash basis. As such, in order to create a buffer between revenues and expenses it loaned out the extra money during ‘good’ times. Essentially, this meant lending out the tax returns to various individuals, or even to cities. Howgego also mentions that “it should be stated at the outset that the Roman state did not itself resort to borrowing except during the dark days of the Second Punic War. By contrast cities in the Roman
world could borrow and did so.”¹⁰²⁹ In relation to the few times that the Roman state did, or wanted to, borrow money, ten Brink mentions that in most cases this occurred in times of war when there was an empty state treasury: this can therefore not be perceived to have been a common occurrence.¹⁰³⁰ However, most of these cases occurred during the Republic. There is only one mention of this occurring during the Principate, which took place after the civil war (68-69 A.D.), and where the senate voted on allowing the state to borrow money; “Early in the reign of Vespasian, the senate voted to accept a loan of sixty million HS from individuals, but it was never taken up.”¹⁰³¹ A dimension to this issue which should not be forgotten, is that during the times in which the state had a surplus of money, it was more than capable of lending this to the cities - which in itself points towards the possibility of there being a state bank. An aspect that was typical of the ‘private’ nature of the Roman Empire, was characterised by the state lending out this money through the mensarii who “in the name of the aerarium [(the state treasury)]…offered ready money to debtors who could give security to the state for it. Such an expediency was devised by the state only in times of great distress.”¹⁰³² In essence, the nummularii described earlier, appeared to be a more permanent and continuous subset of the mensarii (the actual relation between the two is not entirely clear), since during the Principate, the mensarii do not seem to be mentioned often (or at all), but they are attested for during the Republic. A possible reason why this type of ‘public banker’ seems to have disappeared or lessened in importance, is that during the Principate, even though the state could lend out money, it did not actually do so very often (or at all), and this would seem to support all of the scholars’ views which speak against a state bank. The state did not lend out money (neither often nor in large quantities) simply because in many cases its income was insufficient for all of its ‘extraordinary’ expenses (state income/expenses will be discussed later). In the first instance this may appear as though the state were in trouble because it incurred expenses which exceeded its income and it was not able to borrow; however, this is exactly the moment where the Roman Emperors were able to help the state. The Roman Emperors often covered these extra expenses, and considering this aspect, in combination with their responsibility as a state function, the Roman Emperor was in truth a form of a state bank.
In the first instance this may seem confusing, as earlier, the Roman Emperor had been portrayed as a private individual - the largest private money-lender in the Empire. The emperor was indeed a private individual, and he had his private wealth which was strictly separate from that of the state. The emperor’s private treasury was called the fiscus Caesaris (or patrimonium Caesaris)\(^{1033}\) and it only held the emperor’s private money, which meant that no state taxes would flow into this treasury, irrespective of which provinces the taxes came from, even if the imperial provinces were in question. All taxes, from all of the provinces, still went into the one and only central state treasury called the aerarium populi.\(^{1034}\) It is precisely this aspect of the emperor - as a private individual, and at the same time as the Princeps of the state - which shows the dual nature of his status. On the one hand the emperor was a private individual, and on the other hand he was the head of the state and he therefore had certain powers. Keeping this dual nature in mind, taking the example of Augustus will make it clear how the emperor was the Roman version of a state bank. In 12 B.C. Augustus aided the province of Asia after it suffered an earthquake by paying the required yearly tribute of this province, from his own pocket, into the state treasury. This makes two things clear: firstly, that the emperor’s private wealth (fiscus Caesaris) was separate from that of the state’s (aerarium populi), because why else would it be necessary to transfer money from one treasury to the other; and secondly, the Emperor did not simply ‘forgive’ the dues to be paid, rather he actually paid them himself, thereby making sure that the aerarium still received what it was due.\(^{1035}\) This example already clearly shows the abilities of the Emperor to step in and carry out functions that a state bank would normally conduct, as no private bank would have been willing to pay the provincial tribute without asking for tremendous interest rates in consideration of the momentary risks. Furthermore, an even better example exists which should clearly show that the Emperor ‘was’ the Roman state bank. At a certain point during Augustus’s reign the aerarium was in dire need of funds and Augustus solved this problem, first by borrowing money privately for himself, and then by offering this money to the aerarium.\(^{1036}\) While from a legal perspective this was clearly an act of private borrowing followed by a donation, in practical terms, it was actually some form of ‘state borrowing’. In essence, this explains why during the Principate, the state ‘never’ borrowed money, even when it had insufficient funds. The Emperors were always capable of using their own private funds to assist the state, and they could even borrow money for that very purpose if they themselves lacked
funds at that point. What Augustus had begun, and by doing so he set an example, all other emperors after him followed (at least within the time-frame of this thesis), and as such, the emperors would often pay for various state expenditures, with some examples being:

a) imperial donations to the army, which even under the thrifty Tiberius, amounted to 180 from 160 million HS, and during the reign of Claudius to 200 million HS.\(^{1037}\)
b) costs for the construction and maintenance of public buildings, where Domitian, for example, had supposedly spent yearly sums of 20-60 million HS for this purpose. Other emperors, for example like Claudius, with his large-scale projects, are attested to have had expenditures of well over several hundred million sesterces. Trajan and Hadrian also spent similar amounts, if not more.\(^{1038}\)
c) expenses in times of a crisis, for example great fires, earthquakes, poor harvests, financial crises, etc. These crises could easily cost up to several millions: for example, Tiberius donated 100 million HS to Rome after a great fire. He also donated 10 million HS and a 5-year exemption from tax for the city of Sardis after an earthquake (it seems this tax exemption was also granted to 11 other cities in Asia Minor). The most famous case is in 33 AD when the emperor gave out 100 million HS through various ‘bankers’ as interest-free loans to indebted landowners. The financial crisis was solved this way.\(^{1039}\)

Essentially, like Rostovtzeff writes, as the emperors became richer, partially through normal economic processes and partially through confiscations and hereditary means, they were often willing and ready to use their personal income for the betterment and running of the state. As such, they also paid for the expenses relating to the construction and maintenance of Rome, took care of the food supply and entertainment for the population, gave gifts to the soldiers and prepared special funds for the compensation of soldiers at the end of their service, built roads in Italy and in the provinces, and generally followed the path Augustus had set, and took care of public expenses when required. However, since they were prepared to do this, they also then took the entire responsibility of making sure the state continued to run well.\(^{1040}\) It was this responsibility which ultimately made the Emperors’ function similar to that of a state bank, with the additional benefit that they actually mostly ‘donated’ to cover for the state’s needs, and that they did not require the state to repay the money. To that extent, the authors who claim that there was no state bank are not
completely correct. They are most certainly correct in saying that there was no institution as such - for there was none - and even the emperor, who was capable of conducting many of the necessary functions, legally, was not obligated to do so. Unlike a true state bank institution, the emperor could have theoretically refused to help the state out; however, within the time span of this thesis, this did not occur, as even the most infamous and debauched emperors are attested to have frequently intervened in order to help the state with their personal funds. The point which has to be remembered, is that while the Roman Empire did not have a state bank which existed in the form as they are today, or even according to the definition of a state bank, it had the emperor who was capable of conducting similar functions, and there was therefore no need for a ‘real’ state bank. It is a ‘mistake’ that modern scholars make by looking for the exact same types of institutions that exist today, because many of these could not have existed then. It is better to examine what these institutions actually did to see if there were similar versions of their kind in ancient times. For example, taking the ‘Roman Emperor as a state bank’ theory to the next step, one could theoretically argue that the emperor, in combination with the state, also functioned as a central bank.

A central bank is the “entity responsible for overseeing the monetary system for a nation (or group of nations). Central banks have a wide range of responsibilities - from overseeing monetary policy to implementing specific goals such as currency stability, low inflation and full employment. Central banks also generally issue currency, function as the bank of the government, regulate the credit system, oversee commercial banks, manage exchange reserves and act as a lender of last resort.”

It is evident from the previous section pertaining to money that the Empire had some sort of a monetary policy which was displayed through its currency stability and low inflation. Even though most scholars will correctly point out that low inflation was a ‘general trend’ in antiquity, it is necessary to view this aspect in relative terms. For example, within the first two centuries A.D. inflation was low, but this changed and inflation “in the century leading up to Diocletian’s price control edict in 301 AD appears to have averaged under 4 percent per annum.” 4% by today’s standards does not sound terrifying; however, in antiquity 4% was rather significant, and even though inflation will be examined in a later section, during the first century for example, it was below 1%. The question of employment and labour will also be
examined later; however, what is most telling for example, is Emperor Vespasian’s (A.D. 69-79) refusal to accept the usage of a device which would have saved human labour by saying “You must let me feed my poor people”, which heavily suggests that the Romans were aware that the more of the population is employed, the better.\textsuperscript{1043}

Issuance of currency has already been examined in a previous section, where the Emperor had sole mint rights of silver and gold coins, and the senate copper. The Emperor also functioned as the ‘bank’ of the government, because of his ability to use his private wealth for state purposes. The credit system was regulated, only insofar as there was a maximum legal interest rate, but this shows that at least regulation did exist. The same applies to exchange rates, regulated by the nummularii, who technically worked for the state. All of these points should make clear how the Roman state was able to conduct the majority of the functions that a central bank would. The only main aspect lacking is the management of exchange reserves. This aspect, however, would have been of little use in antiquity, as the only foreign nations that actually had currency were Parthia and the ‘middle kingdoms’ of India. Furthermore, it should not be forgotten that all currencies would have been exchanged for their metallic content. However, interestingly enough, judging from all of the sources used for this paper, Roman coins are found almost ‘everywhere’ (considering what had been ‘discovered’ of the world at that point) in significant quantities, even as far as China, but there is no mention of foreign coins being found within the domains of the Roman Empire, which suggests that Roman currency was accepted and desired ‘everywhere’ while the opposite did not necessarily apply. This aspect, however, falls outside the scope of this paper, but ultimately it could also give a secondary reason as to why the Romans never made an effort to keep foreign reserves.

A last aspect which will be brought to attention, which also shows the extent to which the emperor and the state were intertwined and could have therefore functioned ‘together’ as a central bank, is bureaucracy. This aspect will not be explored in great detail, but a quote from Roberto should make the circumstances clear. He writes that in “the Early Empire the administration of finance, as well as other branches of the Roman state, lacked ‘organs of transmission’. The early emperors simply utilized their own private staffs for state affairs. Emperor Claudius (41-54 A.D.), instituting the imperial secretariat, transformed this household service into a department of state. The establishment of a professional staff gave continuity to the administrative
operations of the central government. This bureaucratic routinization reduced the impact of the nonrational personal attributes of individual emperors on the day-to-day functioning of the state...As the Empire grew, so did the number of ministries, departments and officials (see Homo, 1929:349). This growth contributed to the routinization and regulation of administrative activity in a hierarchical structure ruled by the emperor. Rostovtzeff concurs with this and mentions that, as such, the slaves of the emperor, his private secretaries and his main financial officer (a rationibus), had the finances of the emperor’s household, Egypt and the other provinces under their supervision. In fact, technically speaking, it was actually the emperor’s own staff which ran large parts of the bureaucracy and which thus made him aware of all the conditions in the Empire. This was exemplified by the brevarium totius imperii that Augustus published, which showed an overview of the military and financial resources of the entire Empire.

It should be clear by now that even though there was no true state or central bank - neither in the form of an institution, nor as they exist today - the Roman Empire did have its own version of one. The emperor and his ‘bureaucracy’, in combination with the state, conducted most aspects of what a state or central bank would do. This must be clearly understood, for otherwise, as some scholars believe, it would seem that since the Romans did not have an institutionalised state/central bank, they did not have any knowledge of finance or economics, or any means of responding properly to financial crises. This is clearly not the case, for the Romans were sufficiently well-versed in economic and financial matters. Even though they were not at present day levels of sophistication, their systems were more than sufficient for their purposes, and as the explanations reveal, all relevant aspects of a central bank were actually conducted.

**Temples**

Temples were yet another possible source of credit for the Romans, and Kloft mentions that many temples in the Principate also functioned as ‘banks’. Exactly what type of functions beyond money-lending the temples were able to conduct, does not seem to be entirely clear from the sources. They could have most probably been able to conduct functions similar to those that a city bank could conduct, and the role they carried out would have also probably depended on the importance of the temple
in question. For example, Kloft writes about the importance of a ‘temple economy’ which even existed during the Principate, and he mentions that Lucian of Samosata (120-185 A.D.) was amazed by the temple of Atagartis in Hierapolis, to which vast amounts of money from the entire East flowed.\textsuperscript{1048} If truly large amounts of money from the East flowed through the temple of Atagartis, it would have most probably conducted the various functions that any city bank or argentarii could. Amongst these, moneylending, interest-bearing deposits, and credit mediation would have most probably been included in its functions, which is indeed attested for by Drexhage, Konen, and Ruffing who mention that the temple of Artemis in Ephesos functioned as a depository bank as well as a creditory bank. They also mention that in general, these were the two main functions that temple banks carried out, and that other financial functions were conducted primarily by private individuals and private bankers.\textsuperscript{1049} Temin, to that effect, mentions other temple banks and writes that the “most famous banks were on Delos, where there were both temple and private banks…The Temple of Apollo appeared to give loans with houses as security, what we now would regard as a mortgage. There can be no doubt that these institutions were what we call commercial banks.”\textsuperscript{1050}

As a general conclusion, one can accept that various temples functioned as banks and that they conducted similar or like services with regard to their financial power and sophistication, and ultimately, that a large number of these temple banks could at least accept deposits and lend money. It is interesting to note that the majority of temple banks mentioned in sources, especially those temple banks with great financial strength, are predominantly attested for in the East, which once again clearly shows the tendency for the eastern half of the Empire to use ‘public’ banks more than the western half.

\textbf{Roman Corporations (Societates Publicanorum)}

The \textit{societates publicanorum} were Roman corporations, and Malmendier expresses this best when she writes that “contrary to widespread belief, the earliest predecessor of the modern business corporation was not the English East India Company nor the medieval commenda, but the Roman \textit{societas publicanorum}”.\textsuperscript{1051} The \textit{societates publicanorum} came into existence during the Republic and they also experienced their height during the Republic. Even though they slowly diminished in importance
during the Principate, they are attested to have existed (to some extent) as late as the time of Alexander Severus.\textsuperscript{1052}

At their height, the societates publicanorum conducted a whole variety of functions for the state, since the state was either not capable of doing them, or as Malmendier writes: “Rome distrusted the continuity of power embedded in a bureaucratic state machine. Instead, public services were contracted out and public income sources were leased to private entrepreneurs.”\textsuperscript{1053} The fact that the Romans placed a lot of emphasis and trust on the private individual has been alluded to in various parts of this paper: the Romans were more inclined to let ‘private individuals’ deal with such matters, rather than handing them over to a bureaucracy or state administration. It is precisely this focus on the private individual that makes it evident why the Roman system so closely resembled (and in essence was) a free-market capitalistic system. As such, during the Republic (and to some extent also during the Principate), the state allowed most of its work to be carried out by corporations or private individuals: these individuals were called publicani.\textsuperscript{1054} Publicani, in essence, meant “those who deal with public property”\textsuperscript{1055}. Even though the publicani would gradually lose their ability to conduct various state functions, it is still interesting to show what they had initially been capable of, and this included the following:\textsuperscript{1056}

1. Public deliveries:
   a. fulfilment of small, regular, recurrent or occasional tasks for the state
   b. supplying the military
   c. maintenance of public buildings
   d. construction of new buildings

2. Lease/rent of public property:
   a. fish-farms in lakes and rivers
   b. various public buildings, for example; shops, market stalls, baths, aqueducts, sewers, bridges, roads
   c. lease/rent of ager publicus (public land) for which payment (vectigal) was made for five year periods; public pasture lands for payment of the scriptura; forests, pitch manufacture, mines of all types, saltworks, etc.
3. Lease of state income:
collection of a variety of taxes and dues: *portoria, vectigalia, tributa* of the provinces, etc.

The whole slew of tasks described above which the state leased out to individuals or corporations, clearly shows how much of what is perceived to be within the domain of the state today, was actually conducted by private individuals during Roman times. In that regard, ironically, one could claim that the Romans had more of a free-market system than we have today; for example, tax collection is conducted in modernity by the state and not private individuals or corporations.

Before the state lease system and its evolution are explained, it should be made clear that *publicani* and *societates publicanorum* were not the same thing. *Publicani* were individuals (as explained above) and only the *societates publicanorum* had similar characteristics to corporations as they are known today. In essence, various *publicani* would have played a part in forming a *societates*, even though it was not a pre-requisite to be a *publicani* in order to become a member of a *societates publicanorum* during its formation process. This has to be clear, as it appears that the greatest disparity between various authors on this subject arises from the fact that many equate the two terms, but in truth they should be understood as two separate ‘entities’. To make matters somewhat more complicated, and in order to show why some authors were not able to separate the two terms, is the fact that a *societates publicanorum* did not necessarily have to be a corporation as they are understood to be in modernity. For example, ten Brink mentions two types of *societates*.1057

1. Very small *societates* which performed deliveries or public jobs for which they only undertook a part of the entire task, and which were of medium importance. An example of such a *societates* can be given when the Via Caecilia was repaired during the time of Sulla. During that time, four *mancipes* (a form of a CEO) each received a portion of the work, where each had responsibility over a sector of 20,000 feet and were separately employed for sums of 150,000 *sesterces*. Two of these were freedmen; however, neither shareholders (*socii*) nor guarantors (*praedes*) are attested for.
2. The large *societates*, of which the following can be attested for:

- In Italy: there was one for the exploitation of pitch manufacture in the forest of Silia; another for the mines of Elba; one for the saltworks and the *scriptura*; one for the *portorium* in Aquileia; one for the *portorium* in Trieste; one for the pitch manufacture and for the saltworks in Minturnes.

- In the Provinces: one for the *portorium* and for the *scriptura* in Sicily; one for the saltworks in Sardinia; one for the *decuma* in Delos; multiple ones in the Achaean province; one for the *vectigal* and the *scriptura* in Africa; multiple ones in Asia; multiple ones for the *scriptura* and *portorium* of Cilicia; multiple ones for Cyprus and Syria.

Only the second type of *societates* were what can be perceived as examples of ‘true’ corporations, which included shareholders, shares, etc. In order to make matters more simple for the purposes of this paper, when discussing corporations, the ‘true’ Roman corporations shall be called *societates publicanorum* while individuals and even ten Brink’s first type of *societates*, shall simply be called *publicani*; in truth, these were more dependent on one person than on many. This has to be made very clear: throughout the Principate, the *societates publicanorum* would have various powers and public contract options removed, while the *publicani*, it appears, were placed under lesser restrictions.

This concept of restrictions has to be expanded upon, as it does not imply that the state preferred the individual *publicani*: it was simply the case that the state later took over the functions that mainly large corporations had conducted previously, while it left some of the lesser tasks to individuals. For example, in consideration of the functions which the state leased or rented out, function 2 generally remained open for individuals to perform during the time of the Principate. In essence, the lease/rent of a variety of public property could still be contracted from the state; for example, a variety of sources still mention the rent of market stalls, baths, fish/farms, public pasture lands, forests, etc. It was more commonly functions 1 and 3, especially function 3, which ceased to be contracted out to individuals or corporations. Why function 2 generally remained a possibility for *publicani* and not *societates publicanorum* to carry out, is simply due to size. Why would one need to form a corporation for the rent and usage of a market stall? One individual would have had
more than enough money to rent and use a market stall on the Forum. On the other hand, larger objects, such as aqueducts and sewers which required large amounts of money, and which had been contracted to corporations, were later taken care of by the state (and/or the emperor). However, to pinpoint at exactly what point or precisely which tasks were taken away from the publicani, falls outside the scope of this paper: the main focus will be on societates publicanorum and what occurred to them.

Malmendier writes that by the onset of the Principate, the societates publicanorum “were limited to collecting taxes and dues. Then, Augustus transferred the tax collection contracts in Gaul, Asia and finally in all of the imperial provinces to a procurator Augusti, who was part of his bureaucracy. Gradual restrictions continued to be implemented throughout the Julio-Claudian dynasty (Tiberius, Caligula, Claudius, and Nero; 14-68 A.D.). In the 2nd century A.D., Trajan (98-117 A.D.) limited the lease of collections contracts for private entrepreneurs to isolated types of taxes such as the inheritance tax. The large-scale operations of the publicans reverted to smaller-sized businesses of so called conductores (contractors), similar to their origins in the early Republic.”

The activities mentioned in this quote by Malmendier should be taken as a general occurrence, because irrespective of the quote, Malmendier herself seems to imply that for example, military supply contracts were still open to corporations during the Principate. Beigel, to that extent, claims that during Augustus, lease opportunities still remained in excise duties, pastureland, mines, and saltworks. In general, almost no authors used for the purposes of this thesis who discuss corporations, agree on exactly what types of functions, and when, the corporations ceased being capable of conducting, simply because no records of this remain, and much like in the case of the publicani, it falls outside the range of this paper to try to discover when exactly the corporations lost which function. As such, for the purpose of this paper, it will be assumed that the ‘true’ Roman corporations existed approximately until the time of Trajan - since the majority of authors and sources do appear to agree on this point - and that by the end, the corporations were generally exclusively lessees of various dues and duties contracts, and possibly military supply contracts.

It is perhaps helpful to understand how these corporations were made and how they functioned, in order to show how similar they were to modern corporations. Legally,
the *societates publicanorum* were a special entity; these corporations were granted the right to be legal entities through senatorial decrees. This allowed the corporations to have corporate assets, to have a single consolidated treasury, to have the corporation run by a representative, and to have a continued existence of the corporation - even after the death of a shareholder.\textsuperscript{1061} It also meant that the corporations could “file actions, including actions against fraud and embezzlement…and inherit items.”\textsuperscript{1062}

Each corporation had a person at its head, who was also its guarantor. This person was called the *manceps*. This person would bid in auctions, sign the contract with the state, place the deposit/security, and accept the risk.\textsuperscript{1063} “All types of [state] contracts were awarded via auctions, similar to allocation of licenses or spectrum rights today…The auctions took place on the central Roman market place, the *Forum Romanum* (with a few exceptions of auctions taking place in the provinces)...the censors...[were] permitted to grant tax collection contracts only in the presence of the people of Rome...preventing non-competitive allocations to preferred entrepreneurs.”\textsuperscript{1064} The contracts usually lasted 4 years during the Republic, and 5 years during the Principate. The conditions of the contracts were set by the *lex censoria* and the proceeds from the contracts went into the state *aerarium*.\textsuperscript{1065} According to ten Brink, the fact that auctions had to be public and that contracts were set between 4-5 years, limited to some extent, the creation of corporate monopolies because by doing so, it would have given other likely candidates a chance (unlike the early modern equivalents, like for example the English East India company).\textsuperscript{1066}

Below the *manceps* (who can be regarded to some extent, as the equivalent of a CEO), were the *socii* (something akin to members of the board, although they were also majority stakeholders), whose stake/participation depended on various agreements.\textsuperscript{1067} The *socii* were active in the corporation as guarantors, capital grantors, etc. They occasionally held discussions and meetings which were initiated by the *magister*.\textsuperscript{1068} The *magister societatis* was in charge of the main management in Rome,\textsuperscript{1069} although it seems that there could be one or more *magistri*, who changed regularly every couple of years.\textsuperscript{1070} Below the *magistri* were the *promagistri* who were the main managers in the provinces,\textsuperscript{1071} and below these were the manifold officials, employees, etc.\textsuperscript{1072} In essence, the various *magistri* can be perceived as the top managers of the corporation. These corporations naturally also had shareholders, which, beyond their share, did not have any decision-making powers and they had minimal rights within the corporation. The capital of the corporation was split into
shares (*partes*), and these belonged to the *socii* and the shareholders. The shareholders were either called *participes* or *ad fines*. These shares were noted in the books of the corporation and could either be purchased directly from the corporation or from anybody who possessed them. Senators were actually not supposed to be allowed to take part in this, but according to ten Brink, this seems debatable as Caesar, and later Vatinius, are known to have owned shares.

As a conclusion, the similarity in structure between Roman corporations and modern corporations should be clear, although it should also be clear that they were not the exact equivalent, as Malmendier writes; “the *societas publicanorum* does not satisfy every criterion of a modern legal definition of a business corporation…[but] From a practical, economic perspective, the historical sources paint a compelling picture of the *societas publicanorum* as the first business corporation.”

An example of one of the main differences between the modern and the Roman corporation, as ten Brink mentions, is that the death of the *manceps* caused the dissolution of the corporation, while the death of a *socii* or the shareholders had no effect on the continuation of the corporation. Nonetheless, it is interesting to note that this ‘weakness’ of the Roman corporation did not remain for too long, since naturally both the government and the shareholders would have wanted the corporation to remain. To that effect, Malmendier writes that in 57 B.C. a decree was passed through which “the [*societates*] had the option to substitute the *manceps* with another person for a limited period after contract conclusion…[and] From 5 A.D. on, even annual changes were permitted…That way, the censors established contractual continuity of the relationship between a *societates publicanorum* and the government despite the replacement.”

This way, the death of the *manceps* would not necessarily signify the end of the corporation. Ultimately, no matter how similar the Roman corporations were to the modern corporations, it is not the purpose of this section to claim that they are, rather that they were more than sufficiently sophisticated to still be correctly labelled as corporations.

The next aspect which should be explored, is the specific nature of how trading with Roman shares worked. It is known that various people existed who invested much of their capital into these corporations, and that the shares were sometimes expensive, and at other times very risky, and that there were also people who owned various
shares in various corporations. An example which De Martino alludes to comes from Polybios, who actually said that large amounts of people were involved in these corporations, and that they made a profit from them. Even though De Martino believes this to be an exaggeration, by saying, that in truth these corporations did not have a multitude of small share holders; it does not change the fact that there were small shareholders and that not only the upper classes were involved. To that extent, Beigel mentions that in fact not the senators, but the equestrians, were the most active in respect to corporations, and even though the equestrians were technically the upper class, there is no mention in any of the sources used, that the middle or lower classes were not allowed to, or did not own, shares. The contrary is usually attested: besides Polybius, “Cicero claims that many citizens were financially involved in these businesses.” In fact, Polybius most probably did not exaggerate when he said that “almost every citizen participated, in one form or another, in the government leases...[since] Polybius specifies four forms of participation: those who contract with the censors, the partners of the contractors, the providers of sureties, and investors.”

With regard to shares, a “common trading place was supposedly near the Temple of Castor on the Forum Romanum”, and the shares had a value which seemed to fluctuate according to market forces. For example, in 59 BC shares were deemed expensive by Cicero, and ten Brink mentions this was probably due to the fact that the tax-farming corporations had managed to reduce their initial contract price by a third, since in 61 BC, after the defeat of Mithridates, there was a very strong competition for the most lucrative public contracts, which had led to an ‘unrealistic’ increase in the prices for contracts. Once the societates publicanorum realised they had bid too high, they approached the senate and asked for a one-third cutback of the contract price. This was eventually approved, but it took close to 2 years for the decree to be passed. The result would have naturally been an increase in demand for the shares, and thereby price, due to the ‘better’ conditions for the corporations. Malmendier, furthermore, mentions “that shares of different companies came in different nominal values” and that Cicero “implies that the value of the shares depends on the success of the enterprise and was as such subject to fluctuations, just like today’s stock market.”
As a general conclusion it can be accepted that anybody who had sufficient funds was capable of purchasing shares and selling them as desired. The shares would fluctuate in price according to market forces, and it was not uncommon for a variety of people to own various shares in a variety of corporations with a mind to diversifying their portfolios and minimizing their risks. Diversification was already a well-known concept during the Republic: Malmendier sites Cato, who said that “if people wished to obtain money for shipping business, they should form a large association and when the association had 50 members and as many ships, he would take one share in the company.”

Even though Cato, and Polybius and Cicero who have been mentioned previously, all lived during the Republic, general speaking, even many primitivists would agree on the fact that the economic situation became more sophisticated during the early Principate, so it would be more than likely that their ideas and beliefs would also apply to the Principate. In addition to this, an interesting quote taken from Malmendier, who herself quotes Cicero mentioning that a specific *societas publicanorum* “consists of other societates [publicanorum]”, infers that various corporations could also purchase shares from other corporations. Whatever the case may be, it should be clear that shares were traded according to market forces and that they were available to ‘all’.

It would perhaps be of use to finally explain why this section on corporations falls within the section on banking and finance. This is because many of these corporations did not only focus on their state contracts, but also conducted business of all types. The *societates publicani* were also active in the world of finance, for example the Roman state had given the *publicani* in Sicily money for Verres who was supposed to purchase the grain in Sicily. However, instead of purchasing grain, Verres had deposited the money with the *publicani* and demanded an interest of 2% per month. Irrespective of Verres’s illegal conduct, this clearly shows the ability of individuals not only to invest their money into the corporations via purchasing shares, but also by depositing money. In fact, due to the experience of the corporations with large amounts of capital, even the Roman state and the provincial magistrates often used them as banks, where public money was often deposited and received interest. The corporations were also the only bodies to have an efficient postal service (at least until reforms in the early Principate), and as such they could also be used by individuals to transfer money between the provinces, through
the simple act of booking these transactions (much as has been explained in the earlier sections). The exact range and sophistication of the financial dealings of the corporations is unknown, as it would have depended on the corporation in question, but ultimately they were very large, rich and powerful, so one could have expected a variety of financial possibilities and sophistication. Ironically, it was precisely this strength which in some respect became their downfall during the Principate; as Robert writes, in terms of the tax-collecting corporations, “their first interest was profit, rather than equitable collection of taxes, [and] the [societates] publicani subjected provincials to gigantic corruptions. The gross injustices of this system contributed greatly to the conflicts of the Late Republic. The replacement of the tax-farming operation with a public financial administration was an important step in the Augustinian pacification. Augustus desired to put imperial taxes and finance under the control of disciplined state officials guided by centrally administered tax rates, collection methods and accounting procedures. This was designed to increase state revenues, while at the same time mollifying the complaints of overtaxed provincials.”

Rostovtzeff actually mentions that the taxes were not lowered but in some cases they even increased. However, it was an improved collection method in comparison to the previous one, especially for the provincial parts of the empire, since they were now able to directly communicate any problems with the taxes to the state or even to the emperor. Furthermore, they were also aware that through his procurators who represented his financial interests, the emperor was aware of things transpiring within the senate’s provinces.

In conclusion, the extent of the sophistication of the Roman economic system should be evident, recognising that it was able to harbour an environment in which corporations were not only structured, but also functioned very similarly to corporations today. Even though the corporations lost in strength as the state and the emperor increased their range of functions – which had already happened by the time of Augustus - this should not necessarily be seen as a decline of the Roman economic system. The corporations had simply become too powerful and too profit-oriented, and for this reason the state (and/or the emperor) initially aided the system by taking some functions back from the corporations. Even though this aspect will be covered later, it is interesting to note that problems did exist while the state leased out all its functions to private individuals and corporations, and that later, in the 2nd (and
especially 3rd century A.D., the opposite happened, where problems would occur because the state actually conducted ‘too’ many functions. The examination of the history of Roman corporations with regard to the Roman state, will clearly show that ideal economic status is somewhere in-between complete private and complete state control.

**Types of Loans & Interest Rate**

It should be sufficiently clear by now that money-lending did indeed exist within the Roman Empire, and that it existed to an extent which would merit an examination of the interest rates and types of loans available to a Roman. In the first instance, beyond perhaps exploring interest rates, this may seem to be superfluous: one can naturally expect any system with such a variety of sources of credit, such as the one described earlier, would have had a plethora of loans with sufficient sophistication; however, this is not the case. There are various authors who deny the existence of any significant sophistication with regard to loans, and who also put the purpose of the loans themselves into question. For example, Finley writes: “Mine [(hypothesis)] is that among the Romans…large-scale borrowing, borrowing among the men of means, was for non-productive, consumers’ purposes, under which heading I of course include loans for political ends.”

Another example, according to Kloft, are the small dimensions of the loans, the lower status of the money lenders (argentarii), and the high requirement of securities (especially in the form of land), which show the difficulty of obtaining loans, and prove the low importance of the credit business in the Roman economy. The problem with such views are that they are extremely one-sided, in that the authors tended to focus mainly on only one (or few) aspects of the Roman credit system, and often also on only one particular moment in time. As the earlier section has shown, there were a variety of sources for credit available, and furthermore, differences existed within each of these sources. As such, to focus on only one type of source to prove an entire credit system, would be to skew the picture. For example, the fact that Finley can be accused of this, is evident from the following quote: “Cicero turned earlier to faeneratores for the money with which to purchase an urban villa…But when Pliny contemplated the purchase of a large estate in Umbria (*Epistles* 3.19), far from intending to apply to a professional money-lender for a mortgage, he planned the opposite, to call in his own interest-bearing loans and then, if necessary, to make up any deficit by dipping into his mother-in-law’s cash-box.
Whose behaviour was the more typical, Cicero’s or Pliny’s? How Finley can try to construe a picture of ‘typical’ Roman money-lending behaviour from this comparison is not clear. It is more than obvious that an individual will try to attain credit the easiest and quickest way possible. Most probably Cicero did not have a mother-in-law who had a lot of available money, or he was not able to call in his own interest-bearing loans quickly enough to suit his purposes – that is if he had any loans in the first place. One could hypothesise endlessly about various possibilities of attaining money; this, however, would not reveal much about the Roman credit system if the focus falls solely on how two individuals managed to get money. On the other hand, Finley had initially claimed that loans were for “non-productive, consumer’s purposes”, and yet in his example, Cicero is buying an urban villa, and Pliny, an agricultural estate. It is not at all clear why loans that are raised to purchase pieces of real estate, of which one is meant for agricultural production, are deemed to be classified as consumption and non-productive. Considering, for example, that money obtained to purchase an agricultural estate is a non-productive loan, then what would constitute a productive loan? Kloft, to that extent, can also be ‘accused’ of the same error, as he appears to have focused somewhat too much on the argentarii. As already explained in the previous section, it is clear that argentarii definitely had a ‘lower’ status (in comparison to the big moneylenders) and were as such only capable of providing a smaller dimension of loans: this is simply because they generally catered to the lower and middle classes. It is then no wonder that by focusing predominantly on the argentarii, Kloft was not able to find evidence of any large loans.

It would be relatively easy to keep disproving various authors in this way; however, it is the task of this section to explore the actual status of interest rates and loans by showing the various types that existed, the multiple purposes for which they were used, and also how market forces affected the interest rate.

Types & Purposes of loans
The first question which should be answered is what kinds of loans existed, and if they truly were only for non-productive consumption purposes as Finley claimed. In particular, Finley writes: “I do not for a moment dispute that there was a vast amount of money-lending in antiquity, that an unknown and undiscoverable percentage of it
took the form of petty usurious loans to the poor in the towns and the countryside, and that the profits of moneylending at interest were a regular part of the income of the upper classes. The point at issue is not that, but the role of moneylending in production and in economic growth, on which my position is almost wholly negative.\textsuperscript{1100} The problem with this quote, as Kloft for example, astutely discusses, is the open question of what exactly constitutes a productive loan? Would the purchase of land, the construction of a pond for fish, the construction of a large villa, all necessarily be for consumption purposes, or not? Kloft writes that if we do not focus solely on the meaning that ‘productive loans go into industry and trade for the sole reason of profit maximisation’, then we can open up other interpretations. For example, he mentions individual cases of some craftsmen, workers, and traders who certainly made a profit from a loan intended for ‘consumption’\textsuperscript{1101}. Furthermore, in respect to the fact that the Roman Empire was a predominantly agricultural society, why would a loan intended for agriculture not be considered productive? For example, if a person who owns some fallow land takes up a loan in order to plant vineyards, employ people to take care of the land, and eventually produce wine, why would this not be ‘productive’? To give Finley some credit, he does, however, mention “productive and in economic growth”: most probably this particular loan for vineyards would fall under the economic growth aspect; however, Finley regards even these types of loans to be almost non-existent. It is therefore the purpose of this section to show that Finley was not correct, and that loans most definitely existed not only for agriculture, but also for industry and trade.

\textit{Trade loans}

Drexhage, Konen, and Ruffing claim that while a large part of the attested loans were actually for ‘consumption’, a significant part were also intended for ‘business’ purposes, and focused in particular on trade.\textsuperscript{1102} An example of such a trade loan can be given when a certain Hortensius loaned money to C. Avianus Flaccus for his business in equipping ships and for the grain trade,\textsuperscript{1103} and as a remainder, another similar example was already mentioned earlier in the \textit{argentarii} section. It seems evident from a variety of sources that a large proportion of trade loans were the \textit{faenus nauticum} (sea or maritime loans), and although these type of loans had already been in existence during the Republic, Kloft claims their use expanded during the Principate.\textsuperscript{1104} According to De Martino, Rome’s interest in sea trade can be seen by
observing how it adopted and adapted to other maritime laws - especially Rhodian - for its uses. For example, the existence of *faenus nauticum* and damage regulations in cases of jettison of goods (*iectus mercium*) in order to save the ship in times of distress, are well attested for. All in all, ten Brink says it best when mentioning that by looking at legal regulations, for example, in maritime loans or contracts, one can see that the banking business was not only spread out, but that it was also used in the productive sector. The following is an example of such a Roman maritime loan dating from the 2nd century A.D.: in the province of Syria, Kallimachos took from Stichus, a slave of Seius, a maritime loan for the trip from Berytus to Brundisium. The time span was 200 days and the security (lien) was the goods which would be taken from Berytus to Brundisium, and those which would be purchased in Brundisium for the trip back to Berytus. Furthermore, when Kallimachos arrived in Brundisium he had time until the 13th of September to purchase and load other goods and to be on his way by ship to Syria. If he would not have managed to make his purchases and leave the city by the allotted time, he would have then been obligated to repay the full amount owed as if he had completed the voyage, etc.

By considering the Roman trade loan examples, and by acknowledging the various authors who attest productive trade loans it should be evident that trade loans which were intended for ‘economic growth’ certainly did exist, and that they cannot be called non-productive consumption loans. To expand on this point even further, Temin mentions that a certain form of standard maritime loan did exist when he writes: “maritime loans were common enough in the early Roman Empire to have a standard form known to all merchants and their clerks.” The fact that a standard form existed within the Roman Empire very strongly suggests not only the regularity, but also the widespread use of maritime loans, for otherwise how else could there have been a standard form? The only other feasible explanation would be that an empire-wide institution would have ‘forced’ this form of loan to exist, but there is absolutely no mention in sources of any such institution, or even of a legal decree to that extent. The only solution, therefore, would be that maritime loans were so ‘common’ that a standardised form came into existence simply out of a need for simplicity and speed; however, this would only be attainable through a regular and widespread usage of these loans. The question of whether there might have been a great need for maritime loans is evident from the following quote by Hopkins, which
makes reference in particular to the areas of France, Italy and Spain, and where he
writes that “in the High Empire (200 B.C.–A.D. 200), there was more sea-borne trade
in the Mediterranean than ever before, and more than there was for the next thousand
years…[and that] an increase in the volume of inter-regional trade depended upon an
increase in the volume of money to finance it.” If trade was so extensive that it
took the same regions ‘at least’ 1000 years to reach similar levels, then it should be
clear why there must have also been a significant and regular amount of maritime
loans.

As to the question of general trade loans, not necessarily connected with shipping, it
would be a curious aberration if they did not exist at all, considering that maritime
loans were so common. Drexhage, Konen, and Ruffing, to that extent, mention that a
significant amount of business credit of professional bankers (argentarii, etc.) went
into ‘local trade’ and that the richer upper classes financed larger trade (wholesale,
etc.). In addition, Kloft mentions that various managers of licensed commercial
transactions (licita negotiatio) did invest money into their businesses. In essence,
it is evident that all aspects of trade would have been covered, and financing would be
available to those that needed it, and even the sophistication, size and type of trade
loan would have been engineered specifically for the required purpose.

**Industrial loans**

The question of industry is harder to answer than that of trade, because not as much
direct evidence of industrial loans exists, as it does for trade loans. This does not
imply that there were no industrial loans, just that they were not mentioned as often.
One of the main reasons why they held ‘less’ importance than other types of loans
was most probably due to the fact that agriculture was the main area of investment,
and in connection with that, in order to bring the produce anywhere, trade would have
been required, so trade loans would have been mentioned more often as well.
Another main reason why industrial loans are not attested for as frequently, is due
most probably to the fact that a significant part of ‘industrial’ production actually
occurred in rural areas, and to that extent, if someone took out an ‘agricultural’ loan
for his estate, part of the loan might have actually been used for industrial purposes.
In essence, according to Aubert, “the Latin agronomists regarded industrial activities
as a natural complement to agriculture.” This is not to say that the two were
equivalent: there was still a clear distinction, for example, “even when they were part of a landed estate, the exploitation of the larger figlinae [(pottery and brick workshops/factories)] was mostly kept separate from the exploitation of the estate as such. Even if the figlinae were operated by the workforce of the estate, they were legally considered not to be part of the instrumenta fundi.”

Even though legally there might have been a clear separation, individuals who owned such estates (with industrial components) and who needed a loan, most probably could have asked for a loan in order to invest it into their estate and would not have necessarily specified exactly which parts of the estate would make use of the money. Just by looking at the various loans or credit tendencies mentioned by various authors used in this paper, it is evident that it is not always exactly clear what the money will be used for - only a general intention is mentioned - and as such it would not be strange if someone took out a loan in order to ‘invest’ it into his/her estate, which then could have included the industrial aspect.

This is not to say that absolutely no industrial loans are attested for, as for example, Kloft mentions that there certainly were managers of workshops (ergasteria) that did invest money into their businesses. A famous example of not only an industrial loan, but also of entrepreneurial spirit, is the case of Vestorius. He took out a loan with which he founded in Puteoli, a manufacture for the production of Egyptian blue which he then developed further and consequently created a new variation of the blue. Furthermore, he also had various other business enterprises and owned ships. Even though industry will be examined in greater detail in a later section it should be understood that industrial production, while not the predominant form, certainly existed to a sufficient extent to have required significant investments, especially those ‘factories’ that employed over 50 or so workers. It is hard to imagine that those types of factories came into being without some sort of financing, at some point in time, irrespective of the wealth of the owner.

**Agricultural loans**

In consideration of the fact that the Romans primarily invested in land, it would mean that most of the loans also went into agriculture. This picture is easily proven by looking, for example, into the uses of loans taken from the various city kalendarium. To that effect, Beigel mentions that the majority of investments went into agriculture
This alone should make it very clear how important agriculture was and how much money went into it: naturally, depending on the city, each city kalendarium could have easily had several millions of sesterces going through it. It is also important to note that Beigel does not make any mention of consumption loans being taken from the kalendarium. Another source which easily proves how important agricultural loans were, is the afore mentioned alimenta in Italy. De Martino writes that the alimenta basically worked the following way: that generous loans were distributed to the landowners and the interest payments would be used for welfare purposes. These loans were supposed to be used primarily in agriculture and considering what ‘just’ the establishment of the alimenta under Nerva, and later under Trajan, must have cost the state - according to the most recent estimates, some 400 million HS - makes it once more evident how much financing must have been going into agriculture. Even at a more ‘localised’ level, credit for agriculture is mentioned. For example, Temin writes that while some loans “were to finance consumption, many more may well have been for production. Columella (3, 3, 7-11) advised people setting up vineyards to include the interest on borrowed money among their costs as a matter of course: ‘[And] if the husbandman would like to assess his debt according to the vineyards like the moneylender does with the debtor, the owner may [consider] the preceding ½% per month on that total as a perpetual annuity; he should take in 1950 sesterces every year by this calculation, [since] the return on seven iugerum, following from the opinion of Graecinus, exceeds the interest on 32,480 sesterces.’ Columella clearly understood that investors need to think about the cost of invested funds, whether borrowed or not. His advice shows financial sophistication in addition to suggesting the presence of productive loans.”

It should be evident by now that the list of sources and types of agricultural financing available were multiple, primarily since agriculture and land were perceived to be the most important investment by the Romans. As such, there should be little need to expand this section any longer, with the foreknowledge that what has been mentioned for loans in trade, industry, and in particular agriculture, were only simple examples of very straightforward monetary loans. In truth many more complicated and various types of loans existed, and perhaps some should be mentioned to show the sophistication of the Roman system.
‘Concealed’ loans & loans in kind

The fact that simple direct loans were not the only type of monetary loans, should be evident from the following quote by Howgego, who mentions that the “Egyptian evidence reveals not only straightforward monetary loans and mortgages, but also a variety of other devices which concealed what were really loans, such as the sale of a crop before harvest, and the pledging of labour or use of land for an advance of capital…Monetary credit, we may conclude, was an important aspect of the Roman economy.”

Even though his main focus was on Egypt, as has been explained in an earlier section, this can similarly be expected from the more ‘advanced’ parts of the Empire in regard to this aspect, and this would then definitely apply to the general conditions of the Roman Empire due to the fact that incidentally, the most sophisticated provinces tended to be also the most populous. That this also must have applied to Italy, becomes clear from a quote from Pliny (already touched upon in the trade section), who writes: “I had sold my vintage to the merchants, who were extremely eager to purchase it, encouraged by the price it then bore, and what it was probable it would rise to: however they were disappointed in their expectations.”

In essence, this was a sale of crop before harvest, as the price and quantities were agreed upon in advance. The remainder of the letter mentions (among other things) that some merchants had fully or partially paid in advance, and that some would pay upon the date of delivery, which would make the former a Howgego ‘concealed loan’ and the latter a forward contract. As a side note, it is interesting that the price of wine did not increase as had been expected by the merchants, but that it had dropped, and yet they were still obligated to pay Pliny the agreed-upon amount which strongly shows that even forward contracts were honoured.

Another important aspect is that the price of wine was seemingly able to fluctuate according to the market and that there were ‘market expectations’ as well, for all the merchants had seemingly believed that the price would increase.

Beyond such ‘concealed’ monetary loans, there were also loans in kind, primarily agricultural loans. In particular, Howgego writes that “credit might be in money or in kind. The evidence from Egypt is important in giving an impression of the balance between money and kind in that province, and also in demonstrating the complexity of forms which credit might take…In Egypt loans in kind might be in a wide range of
produce, usually agricultural in nature, but the only important form was of corn of seed. That this also applied to other parts of the Empire, is equally mentioned by De Martino, especially for loans in grain (most probably in terms of seeds). The existence of these loans in kind should not however, be taken too far, to make it seem as though the majority of the loans were in kind, as some scholars claim. The vast majority of loans were still monetary, and to that extent Howgego writes: “Of the surviving documents relating to loans for the Roman and Byzantine periods, roughly 60 per cent relate to loans in money, 20 per cent to various forms of loan in a mixture of money and kind, and 20 per cent to loans in kind. The evidence is mostly from the countryside.” It is important to note that this evidence was estimated without taking urban areas into consideration, for had they been included, it is assured that the monetary loan percentage would have been much higher. Furthermore, even though the evidence comes mainly from Egypt, it would have most probably applied to the more sophisticated regions of the Empire as well. Once more the conclusion can be brought forth that the Roman Empire was more than sufficiently monetized, even in its rural areas - not only by its currency, but also from a monetary loan perspective.

As a general conclusion for this section, it should be clear that irrespective of whether the loans were ‘concealed’ or if they were in kind, they existed, and they were generally meant for economic growth and not purely for consumption.

Other & Consumption loans

It should be evident that a plethora of various loans existed, and the largest problem is actually knowing what they were used for. Naturally, many loans mention on the one hand the individuals involved: the lender, the borrower, the person who stood as surety; and on the other, the amount, interest rates and dates. However, most often information about the purpose of the loan is missing. An example of this would be a Dacian loan from a village in 162 A.D:

“Julius Alexander, the lender, required a promise in good faith that the loan of sixty denarii of genuine and sound coin would be duly settled on the day he requested it. Alexander, son of Cariccuis, the borrower, promised in good faith that it would be so settled, and declared that he had received the sixty denarii mentioned above, in cash, as a loan, and that he owed them. Julius Alexander required a promise in good faith that the interest on this principal from this day would be one per cent per thirty days.
and would be paid to Julius Alexander or to whomever it might in the future concern. Alexander, son of Cariccius, promised in good faith that it would be so paid. Titius Primitius stood surety for the due and proper payment of the principal mentioned above and of the interest. Transacted at Alburnus Maior, 20 October, in the consulship of Rusticus (his second consulship) and Aquilinus”.

Another example is a loan between two women in 141 AD, where a “woman loaned 3,500 drachmae to another woman in Egypt for one year at the same interest rate [(1% per month)], [equalling] 420 drachmae [interest] for a one-year loan, by a draft on a private bank” These two examples clearly show that in fact a large number of loans do not mention what the money was intended for, only that a loan was taken. The only educated guess that can come out of this, is that in all likelihood loans for ‘very small’ amounts were most probably intended for consumption purposes, and loans for larger amounts could have been used for any purpose. To that extent, ten Brink mentions that the money-lending and banking business developed itself down to the ability to finance small trade, consumption, and bridging a momentary lack of liquidity. An additional fact that can be gleaned, especially from the Dacian loan, is that it was transferable, since the borrower would repay the amount to ‘whomever’ is holding the loan on its due date. Temin writes that if “the obligation went directly from the borrower to the eventual holder of the loan without involving the original lender, then the loan was negotiable as well”. Another example of transferable loans, equally mentioned by Temin (citing Livy) “reported that prohibitions against higher rates were evaded in the late Republic by transferring the loans to foreigners who were not subject to rate restrictions.” Beyond the ability to transfer loans, this also seems to depict “the picture of financiers evading regulations by going ‘offshore’”, which clearly once more shows that Roman financial sophistication was not rudimentary.

Ultimately, it is clear that a large number of loans existed, and that they were used for a variety of purposes. For example, mentioning a village in Egypt, Howgego writes that there is such evidence from “the register of business contracts at Tebtunis. Over a continuous period of sixteen months in A.D. 45-7 there were recorded 113 loans and fourteen mortgages. The impact of this evidence for cash loans is not much diminished even if one assumes that they arose from economic hardship caused by a
low flood of the Nile.” Furthermore, he adds that “if one includes other forms of contract which either certainly or potentially conceal loans then the number of loans for the period rises to 308.” Even though it is not attested what all of these loans were meant for, it should still be clear just how important money-lending was. 308 cash loans (possibly even more that were not noted, or lost over the ages) in one single village over a period of sixteen months, is a significant sign of money-lending. Even though the exact size of the village is unknown, it would probably not be too far fetched to claim that theoretically, on average, every household took out a loan.

The final aspect to be examined is the question of consumption loans, and the majority of the sources do indeed attest that there were a significant number of loans taken for the purpose of consumption. Various authors seem to have a huge problem with this, especially Finley, who even seems to have an ‘aversion’ to consumption, but it is not entirely clear why consumption should be regarded negatively. An economy can only function if there is consumption. It would be very worrying if there is only production but no consumption. Is not even today’s modern society a ‘consumer society’? If no consumption exists, then there can be no growth, no matter how much money is invested into production. This is a very simple and very obvious concept, and why some authors decry consumption is simply not clear. The more that people consume the better the economy runs, and ultimately, irrespective of how much some authors are against consumption, it is clear that the Roman world, especially from the Republic through to the Principate (at least until the 2nd/3rd century A.D.), was capable of attaining high levels of consumption without any significant drawbacks. Otherwise how else could the economy have grown during this period if consumption was a problem? How could some 400 years of ‘regular growth’ be accounted for - during which all the cases of large consumption were attested for - if consumption were a problem? It is exactly this point which makes it clear that consumption not only is not a problem, but that it is in fact a positive influence. In essence, the Roman periods which display the largest consumption patterns, are also the periods of largest economic growth. Therefore, all authors like Finley, who claim that there was ‘too much’ consumption, are in truth not proving that the economy was rudimentary and weak, but that it was vibrant and strong.
**Interest Rates**

As could already be inferred, there were few or no restrictions on the type of loans and the purposes for them, and in that regard there were also few restrictions, in fact only one main one, when it came to interest rates. The only restriction for ‘regular’ loans was that the legal maximum limit for interest rates was $12\%$ per year. In the first instance this may seem to be an erroneous assessment, as there seem to be multiple cases of various private moneylenders lending above this limit; for example, Finley mentions that at “some time between 58 and 56 B.C., Brutus…lent a considerable sum to the city of Salamis in Cyprus at 48% interest. When the time came for Brutus to collect, Cicero was saddened, and as governor of Cilicia he tried to have the affair settled at the legal 12% rate.” However, it is important to note, that while ‘possible’, it was most certainly illegal for interest rates for regular loans to go above 12%, and to that extent it was punishable by law (as Finley’s example shows). Furthermore, the vast majority of the cases of higher interest rates mentioned by various authors seem to be attested for towards the end of the Republic which would signify that the majority of such cases occur during times of great distress. This is logical considering that during these moments the state had far more pressing matters than to be chasing down high interest rate crimes, and even so, as the case with Cicero shows, interest rate crimes were nonetheless discovered and prosecuted.

In order not to cause any confusion, 12% was the limit for ‘regular’ loans, but there certainly were some type of loans which were legally allowed to go beyond this limit. In particular, these were loans in kind (primarily seed loans) and the *faenus nauticum* (maritime loans). None of the sources used for this paper attest to any limit for interest regarding seed loans: Howgego writes, “Except where seed loans were included in the terms of a tenancy, they could be expensive. Interest for the period between sowing and harvest could be as high as 50 per cent, in contrast to a legal maximum of 12 per cent per annum on cash loans. The high rates for seed loans may be explained in part by the need for storage, and by the fact that corn will have been most scarce when borrowed at the time of sowing, and most plentiful when repaid after the harvest.” Even though agriculture will be covered in a later section, interest for seed loans could most probably have been high due to the relatively high yield (in respect to seeds) attainable in various regions of the Empire. Taking grain as
an example, yields ranging from four to fifteen times the seed are attested for throughout the Empire, which makes it clear why even a 50% interest rate might still have been considered attainable. The *faenus nauticum*, much like the seed loans, also did not have a legal maximum rate, but unlike seed loans, this is even legally attested for, since the *faenus nauticum* mainly placed the risk and the eventual loss of goods in case of shipwreck, on the creditor. In essence, this functioned as a kind of insurance provision in case the ship was lost then there was no obligation to repay the loan, and the lender shared the risk with the ship-owner. However, in order to compensate for the risk, higher interest rates were allowed, and as such there was no legal limit (*infinitum*).

Whether there were other types of loans which also did not adhere to the legal limit, is not entirely clear. Howgego, however, mentions that “Various expedients other than simple loans were found to enable cash to be borrowed, sometimes at rates higher than the legal maximum, presumably by those who were unable to obtain ordinary loans. Types of contracts were employed in which the true rate of interest could be hidden, and it is often hard to decide whether contracts were in reality concealed loans or not…Thus some contracts…may be viewed as ‘antichretic’, that is as loans in which work or the use of land or residence was given in lieu of interest.” Whatever the real case may be about ‘concealed loans’, it would not be surprising if people found ways to circumvent the laws in order to get loans, especially if they could not get loans otherwise. There is almost no need to mention that even in modern societies people often find ways to circumvent various laws in order to achieve a goal or gain a profit. It is necessary to keep in mind that only maritime and seed loans have so far shown to be a regular and legal exception to the 12% maximum interest rate rule, and that the vast majority of loans attested for stayed at or below 12%. Whether some other types of loans were legally allowed to go above this mark is not entirely clear, although judging from Howgego’s example there certainly were ways to do so.

Beyond the 12% interest rate limit for regular loans, the state did little to control or dictate the interest rates. Ten Brink mentions that during the Republic there were some minor attempts to regulate interest rates, but these proved to be unsuccessful, and as such the state seemed to ‘give up’ on any attempt to control interest rates -
except for the 12% interest rate limit, which existed in order to hinder usury. To that extent, the interest rates were largely formed according to market forces. That is evident as a result of two main factors.

The first factor is that generally, the interest rates on regular loans ranged from 4 to 12%, and according to Temin the “variation shows that these loans were not a reciprocal exchange at a fixed rate; they were market exchanges.” That fact that this applies generally to the Roman Empire is clear, even though some evidence originating purely from Egypt, where a presence of predominantly 12% loans is attested for, could seem to contradict this theory. In essence, however, all it means is that the Egyptian market was not completely free, but as interest rates below 12% did exist, it would not imply complete control either. The peculiarities of Egypt and its greater state control over life and the market are aspects which have been frequently documented by various authors and alluded to various times throughout this paper. It should be sufficient to note that although Egypt was part of the Roman Empire, it was nonetheless unique with regard to the amount of state control arising from its long history of near complete state control - even before the Roman conquest. As the Romans generally adapted to prevailing conditions, they liberalised the Egyptian market only to a certain extent. For example, it has already been mentioned that before the Roman conquest, all banks generally seemed to be state banks; however, during the Roman occupation, a whole variety of private banks cropped up. Therefore, if Egyptian interest rates seemed to often come to the same value, it does not necessarily imply that the same applied to the entire Roman Empire. This can be evidenced, according to Temin, by examining “the records of over one hundred perpetual foundations set up to fund government child-support grants (the alimenta) in many Italian towns in the second century to calculate interest rates. They ranged, with only very few exceptions, from five to twelve per cent”.

As a general conclusion, it appears that loans could range from 4 to 12%, and that primarily, as mentioned earlier, there were hundreds of millions of sesterces running through the alimenta system which should definitely have given it sufficient weight. Another possibility as to why so many loans in Egypt were attested to have frequently reached 12%, could be because they were predominantly loans with riskier securities (of whatever kind), and the interest rates would have therefore been higher. For
example, Temin, citing Andreau, writes that “the interest rate on loans was typically higher than the return on land and explained the difference by the greater risk in lending money.”1150 To that effect, it would not be surprising that loans which were intended for riskier investments, or which had riskier securities, would have higher interest rates. However, irrespective of whether the Egyptian loans examined were possibly predominantly riskier loans, or that Egypt had more ‘state control’ over interest rates than other provinces, one thing is certain, and that is that Egypt was unique in the amount of state control (exemplified in this case with the only provincial ‘state bank’ in the Roman Empire). This means that if even Egypt had free-ranging interest rate capabilities, irrespective of the fact that the majority appear to amount to 12%, it would imply that the other provinces of the Empire, with far weaker state controls, would have an even more liberalised interest rate market. This would thereby be exemplifying that the Roman Empire allowed interest rates to be formed by market forces and that it did not control them.

The second factor proving not only that market forces dictated interest rates, but that there was even a ‘market interest rate’ which fluctuated and that was still known to Romans, can be inferred from Cicero’s letters. De Martino, citing Cicero, mentions that interest rates were dependent on market forces, which can be evidenced by Cicero’s claim that at the end of 62 B.C., solvent individuals could easily expect to get loans for 6% interest, and a few years later they could obtain loans at 4%, and then in 54 B.C., due to political fighting, the interest rate rose to 8%.1151 It is possible to infer that these were market interest rates from the fact that Cicero used the term *bona nomina* (in essence signifying good loans for ‘safe’ securities) for all examples, thereby clearly showing that the interest rates applied to the same type of loan and security. This meant that the main reason they were able to change was due to the market forces of supply and demand, as Cicero makes no mention of government regulations. This clearly shows that market forces not only dictated interest rates, but that the Romans were capable of calculating and knowing what the actual ‘market interest rate’ was. Further examples that prove this are attested for by Temin, by citing Cicero, who “commented that monthly ‘interest [rates] went up on the Ides of July from 1/3 to ½ percent’”1152 and by citing Duncan-Jones, that “there was ‘a 60 per cent drop in interest-rates after Augustus brought back treasure from Egypt’.”1153 It should be clear that these two examples show market forces at work, in the same way
for example, that sudden treasure would signify an increase in money supply which would lower interest rates.

Even though until now the focus has been on regular loans, this does not mean that only interest rates for regular loans were affected by market forces. Market forces also affected all other types of loans, even the seed loans and the maritime loans. As the earlier quote has shown, seed loan interest rates could have had any value up to 50%, depending on a variety of conditions. The same applies to maritime loans; for example, it was common that interest rates for maritime loans would increase in the autumn/winter due to a greater risk of shipping, which is the reason why in the earlier cited maritime loan, Kallimachos had to be on his way back by the 13th of September, as the risk as a result of weather would increase. The Mediterranean was known for increased poorer conditions during those several months, and to that extent the ships trying to travel during this period would involve taking higher risks. Unlike for regular loans, no market interest rate has been discovered for maritime loans. In a study by Gianfranco Purpura, he mentions that the maritime loans he examined had an average interest rate of around 33.3%. Drehage, Konen, and Ruffing on the other hand, mention that interest rates moved between 10 to 33%. What exactly the market interest rate might have been for maritime loans at any point in time is unclear, but that interest rates were higher than for regular loans is clear due to the aforementioned insurance provisions. Furthermore, it is clear from an earlier citation by Hopkins that these higher rates did not hinder trade, where he states that it took ‘at least’ some 1000 years for trade to start reaching the same volume.

It should be evident by now that interest rates were dictated by market forces, and that generally, a market interest rate existed which was calculable and known to the Romans. However, this is not to say that the system was perfect: Roman markets perhaps were not as precise as our modern ones were, but in respect to the technological level and the vastness of the empire, they certainly did work very well. Furthermore, as Temin mentions, the fact that various interest rates and various types of loans existed, makes a good case for a market economy. If a Roman could choose what type of investment he/she wanted, and this was done with the intention to make a profit, it definitely points towards a market economy. That this system was able to function, and function well over a long period of time, is even
attested for by primitivists. For example, Finley writes that “interest rates in the…Roman worlds were…fairly stable locally over long periods (allowing for sudden fluctuations in moments of intense political conflict or military conquest).” 1160

This truly shows the strength of the economy, for only a strong and vibrant economy which has almost no interest rate regulations can have interest rates remain fairly stable, with market forces dictating interest rates. That this must be so, is evident from all of the aforementioned facts about the variety of sources of finance, the types and number of loans, and the interest rates, irrespective of whether Finley actually sees the stability as a sign of a non-market economy: “so that to speak of a…”money market” is immediately to falsify the situation.” 1161 As such, it can be accepted as a general conclusion that the ‘money market’ was open and dictated by market forces, and the system was sufficiently sophisticated - even with lower levels of technology - especially in communications, to still warrant a fairly stable system that ran well throughout the period examined.

**Roman Debt & Bankruptcy**

The last aspect which needs to be addressed with regard to loans is the issue of debt, i.e. bankruptcy, as this demonstrates the high level of sophistication which the financial system achieved in the Roman world, and shows that the Roman legal system was easily on par with most of the developed countries in the 18th-19th centuries. In essence, according to Kilborn, the “first clear legal ancestor of modern ‘merciful’ debt relief developed in the Roman Empire…The practice of *cessio bonorum* introduced into Roman law…[is] the notion upon which modern bankruptcy law is still based.” 1162 In particular, as an example he mentions that both the U.S. and England attained ‘similar’ bankruptcy stipulations and conditions as the Romans did, only in the 19th century. 1163

From a legal aspect, it is clear that this ‘merciful’ debt relief of *cessio bonorum*, according to Frederiksen, most probably came into existence with the *lex Julia de bonis cedendis* in approximately 45/46 B.C. 1164 A “law which, as Mommsen was moved to claim ‘created the rights of a debtor upon which all our modern bankruptcy regulations are based’.” 1165 In essence, according to Frederiksen, through a *cessio bonorum* “a debtor might admit insolvency before a praetor or other magistrate, and with the magistrate’s permission might then ‘cede’ his land or goods in settlement of
his debt, retaining enough to keep him alive. He did not thereby suffer infamia and entirely avoided personal execution; no second action could be brought for the same debts unless the debtor had acquired substantial money in the meantime; and in other ways he was offered protection.” Essentially, according to the Roman jurist Gaius, the cessio bonorum “conferred three benefits on the debtor: exemption from arrest and imprisonment, exemption from infamy, exemption of his after-acquired property from liability beyond a certain amount.” In respect to the third benefit, it could apply not only to those that willingly admitted insolvency before a magistrate, as “some debtors enjoyed a privilege that is called Beneficium competentiae: the privilege of not being condemned to pay the whole amount of their debt but only such an amount as will leave them the means of subsistence…A soldier sued by any creditors; a debtor who has made cessio bonorum, sued by his original creditors in respect of after-acquired property…a person sued on becoming a paterfamilias, but without inheriting much property, by a creditor in an obligation other than a delictal one, incurred when he was a filiusfamilias…a husband sued by a wife or a wife by a husband before or after divorce for a debt incurred during marriage…a partner sued by a partner [etc.].”

From a practical aspect, once the debtor’s property had been sold, the debtor had to create and commence new accounting books (tabulae novae) with the property that remained (i.e. the amount the debtor could keep in order to remain ‘alive’), because the debtor was essentially commencing a new ‘economic business life’ with these new books. The actual amounts (percentage) that a debtor was allowed to keep from his original property in order to ‘live’ varied according to each specific case, but cases of one-sixth, one-fourth and even one-third are attested for.

Even though from a legal, and even a practical aspect, the issue of bankruptcy (insolvency) seems clear. There are some authors who seem to deny that any sort of ‘sophistication’ existed; for example, Finley writes: “If one wishes to grasp the basic attitude to the poor, one must look not at the occasional philanthropy but at the law of debt (as it applied to them, not among status-equals in the upper classes). That law was uniformly harsh and unyielding. Even where the archaic system of debt-bondage disappeared, the defaulting debtor continued to make amends, in one way or another, through compulsory labour, his own and sometimes his children’s.”
The problem with Finley’s viewpoint is that it seems to apply to conditions before the creation of the *lex Julia de bonis cedendis* (46 B.C.) and according to DeMartino, to conditions in the 4th century A.D (when the Empire had already become a shadow of itself). In essence, this means that the conditions for insolvent debtors between these two periods (which correspond to the time-span relevant for this paper) were much better than either the previous or later periods. First of all, in contrast to what Finley writes, there appears to be no mention whatsoever in legal documents that the law of debt ‘only applied to status-equals in the upper classes’, and furthermore, there is even direct evidence that *cessio* was definitely granted to the lower ‘landless’ poor. Secondly, according to Frederiksen, “*nexum* and a creditor’s right to bind a debtor were made obsolete by the *Lex Poetelia* [313 B.C.]” and thirdly, children inheriting a debt were automatically protected - this was stipulated in the *beneficium competentiae* - or they could simply refuse to accept the inheritance.

As the three points outlined above show, Finley’s theory is seemingly proven to be false, but this is not to say that he was completely wrong: in fact, an aspect of his theory certainly does apply. This pertains to the existence of the *addicti*, which can be considered as a form of debt-bondage. In essence, even though *nexum* had been abolished, *addictio* remained possible. Although *addictio* was undoubtedly an improvement over the considerably harsher *nexum* (the specific details of which are nonessential here), it still allowed the creditor to have the debtor work off the debt through temporary ‘compulsory labour’ (until the debt was repaid). However, it has to be clear that the *addicti* were not slaves and they could also not be sold into slavery (which had been possible under *nexum*). In order to hinder any confusion on this subject, one aspect has to be understood: the magistrates had the power (among other options) either to grant the debtor *cessio bonorum*, or to grant the creditor *addictio*. Naturally, this depended on a variety of factors; for example, any debtor committing any delict/tort could not be granted *cessio*, while on the other hand, all those mentioned under *beneficium competentiae* could most probably not become *addicti*. In other instances, a decision would have been reached by the magistrates, and according to Frederiksen, *cessio* was generally “awarded only to those who had some reasonable excuse.” Ultimately, even though it is nigh to impossible to know exactly how many people were judged to be *addicti* or were granted *cessio*, the
number of debt-bondage individuals was probably not very high according to DeMartino, and furthermore, they were seen as the worst form of labourer.\textsuperscript{1185}

A penultimate aspect which should be explained is that when considering the \textit{addictio} from the paradigm of modern ideals, it can be viewed as unsophisticated and ‘ruthless’ and the \textit{cessio bonorum} as not ‘merciful’ enough; however, the conditions during most of the 18\textsuperscript{th}-19\textsuperscript{th} centuries were not much better. For example, the U.S federal bankruptcy act of 1800 “offered only debt relief to merchants and traders, and debtors were not allowed to seek relief themselves”.\textsuperscript{1186} Furthermore, “imprisonment for debt was gradually restricted and ultimately all but abolished in most states in mid- to late-nineteenth century.”\textsuperscript{1187} Another example, relating this time to England, is that only as early as 1813 “was the Court for Relief of Insolvent Debtors created…but it offered only freedom from involuntary confinement—not a discharge of personal debt.”\textsuperscript{1188} It is evident from the three examples given that conditions for insolvent debtors in the 18\textsuperscript{th}-19\textsuperscript{th} centuries were evidently not much more different than they were for the Romans: once more, this should herald the sophistication of the Roman system.

A last point of interest is perhaps the question of extra-legal debt-bondage in the Roman system, as there is evidence of its existence. For example, Frederiksen writes that agreements might have been made voluntarily between the parties\textsuperscript{1189} and that voluntary bondage “may well have survived in Italy of an extra-legal kind…Certainly a debtor could be subjected to extra-legal pressures.”\textsuperscript{1190} Similarly to this, Finley mentions that many contractual farm-tenants remained labouring on estates long after their tenure in order to repay their arrears.\textsuperscript{1191} The problem with this issue is firstly the question of how relevant extra-legal agreements truly are, since the very same question can also be asked in relation to the 18\textsuperscript{th}-19\textsuperscript{th} centuries. Even today in the developed nations of modernity there are various ways to ‘repay’ a debt which do not involve any intervention by the courts, and it is not unheard of, for example, in rural settings for a farmer to work off his debt towards another farmer (as some of Finley’s tenants might have done in Roman times). As such, before the Roman system is chastised for its weakness, a clear picture has to exist of such ‘voluntary’ extra-legal conditions throughout the centuries. Ultimately, however, and as a concluding remark, Frederiksen writes that the “tenor of Roman law…was certainly hostile to
such practices; by the Empire it is clear that real attempts were made to enforce in the provinces the Roman principle that bondage or imprisonment should not happen without a court order. Yet even by the standards of the time, the sanctions might seem unduly harsh; they hardly reflected the important role that money exchanges were playing in society; indeed advancing civilization may have helped to mask the worst asperities, for civil bondage was troublesome to both sides.”

**Roman Accounting**

A final aspect that is connected to the financial and economic world is the question of Roman accounting. Much like law, accounting offers its own ‘clear’ view of economic conditions in the Roman Empire, and it is surprising that very few scholars who discuss the Roman economy neither explore nor mention accounting (beyond using Roman figures). However, it is very important to understand Roman accounting as it is an excellent indicator of the underlying economic and financial basis of daily Roman economic life. Furthermore, everything that has been described until this point - the running of landed estates, industrial workshops, trading activities, military expenditures, etc. - would not have been possible without accounting, especially not when the production unit in question is very large (e.g. Isidorus and his 20,000 employees). As such, it should already be clear from a purely logical approach that the accounting system of the Roman Empire was sufficiently sophisticated to cope with such tasks, and yet voices of dissent persist. As already mentioned in the section on agricultural thought, Finley does not appear to believe in the presence of any sophistication in the accounting system, and it is therefore the intent of this section to show that he could not have been correct in his assessment: although the accounting system of the Roman Empire did not reach modern parallels, it was sophisticated enough for a Roman capitalistic market economy.

Beyond what Finley mentions in the agricultural section, with direct relation to statistics and accounting he writes: “Anyone reads much in ancient authors will eventually be struck by the fact that, in a culture lacking statistics in general, there was a curious abundance of precise figures, readily and publicly proclaimed, of the size of individual fortunes or at least of individual financial transactions…just as the emperor Augustus recorded in the account of his reign which he himself prepared for posthumous publication: I paid out about 860,000,000 sesterces for the purchase of
land for veterans; I handed out in cash altogether 2,400,000,000 sesterces to the treasury, to the plebs of the city of Rome and to demobilize soldiers; and lots more.”

Furthermore, he also writes that “Graeco-Roman bookkeeping was exceedingly rudimentary, essentially restricted to a listing of receipts and expenditures, from which it was impossible to determine the profitability or otherwise of any single activity in a polyculture”. The first problem with Finley’s idea is that in the first quote he writes that Romans were lacking statistics in general, and he expresses surprise that Emperor Augustus was aware of his expenditures, but then in the second quote Finley mentions the Romans were capable of listing receipts and expenditures, thereby disproving his own first theory. Secondly, the latter quote does not explain how Varro or Columella for example, were capable of calculating profit achievable or how any landed business was capable of functioning. The answer therefore, must lie beyond Finley’s assessment and his belief on the matter must be assumed to arise from a misunderstanding of the material, because his statements are not logical in combination with each other, nor in the face of evidence.

In stark contrast to Finley, Temin writes, “Rathbone concluded that the Appianus estate was composed of many parts whose activities were coordinated to exploit economies of scale, aided by a sophisticated accounting system that was in the spirit of double-entry bookkeeping. The estates whose records have survived were connected to and part of a market economy.” The quote by Temin can be no different from Finley’s, as it not only mentions the capability of the Roman accounting system to keep a record of profit in a market economy, but that it was also in ‘the spirit of double-entry bookkeeping’: a system supposedly invented nearly 1000 years after the period in question. The problem faced here is that one word contends against another, and as mentioned previously, almost no other authors mention accounting at all - or like Temin and Finley, only a paragraph at most is dedicated to the subject. The key to this issue is to examine the work of Beigel titled “Rechnungswesen und Buchführung der Römer” (“Roman Methods of Calculation and Bookkeeping”) where he thoroughly examines Roman accounting and reaches a conclusion that definitely proves Temin’s, and not Finely’s point. To fully explore Beigel’s extensive work and mention all of the intricacies of the Roman accounting system, falls outside the scope of this paper, and as such a brief summary will be
made which clearly portrays the sophistication of the Roman accounting system, which incidentally, could only have existed in a capitalistic market economy and not in a subsistence economy.

To commence the discussion, Beigel mentions that the management of vast amounts of money in a world of complicated transactions required an excellent accounting system, and considering how the Romans were capable of keeping track of mobile capital makes it clear that their systematic accounting was similar to that of his time.\textsuperscript{1196} Considering that Beigel wrote in 1904, it is a clear indication that the Roman accounting system, although perhaps behind modern-day standards, can nonetheless be attributed to a level belonging to the 18\textsuperscript{th}/19\textsuperscript{th} centuries. In fact, he claims that Romans ‘understood’ double-entry bookkeeping and he even quotes Cicero to that effect.\textsuperscript{1197} This belief may sound too contradictory at first as the common perception is that double-entry bookkeeping was ‘invented’ by Italian merchants during the middle ages; however, Beigel is aware of this and in fact points out that it could be more than a coincidence that double-entry bookkeeping was ‘discovered’ in the same place where Roman bookkeeping not only reached its pinnacle, but also where it was mandatory for a while!\textsuperscript{1198} This is not to imply that he was adamant with his belief, only that he thought it very likely, and even if the Roman version of double-entry bookkeeping was performed differently in contrast to the methods used in his time, he still believed that it was an extremely highly developed bookkeeping system. As an example, he mentions that the bookkeeping conducted between the ‘headquarters’ and a ‘branch’ with reference to a kalendarium, was booked not only correctly, but in the same method that was contemporary for his time.\textsuperscript{1199} Furthermore, he mentions that the Romans had an idea of the anticipative calculation of interest,\textsuperscript{1200} that they were capable of calculating annuities\textsuperscript{1201}, and were able to cope with all of the requirements for large parts of what has been examined in the financial intermediation section, thus clearly understanding the concepts belonging to a capitalistic market economy.

As already mentioned, Roman bookkeeping was mandatory for a period because of two main reasons. One reason is that the state was capable of correctly taxing its citizens (much like in modernity), and the second is that the citizen would be assured of belonging to the right class according to wealth. In essence, the citizens were
placed in five different ‘classes’ and were taxed accordingly. This was carried out in every municipality and every city, and for every citizen at the time (approx. 3rd century B.C.).

After this period, even though the extremely hierarchical wealth-class system would disappear by the time of the Principate, a remnant of it remained in the form of equestrians and senators being required to have a certain minimum of wealth. As such, the citizen kept books both for himself and for the state. Every citizen’s wealth, according to his tabulae (accounting books), was noted in the census called tabulae censoriae, which was a document that was kept in the state archive (tabularium). Thereby, the state essentially had a continuous knowledge of the wealth and fortunes of its citizens.

This mandatory state bookkeeping system disappeared after the Macedonian war because all direct taxes were declared for elimination: only the indirect taxes remained. However, even though stringent bookkeeping was no longer required, its concept remained and bookkeeping continued to be an important aspect of Roman economic life, even though the direct connection to the census had been severed.

However, this is not to imply that there was no longer a need for accounting and that the Romans kept books just because they became ‘used’ to the idea. Bookkeeping was very important, even during the Principate. It was still very much connected to conducting business, much as the contractus nominis or litteralis were still connected to it. Essentially, irrespective of the type of contract (including even nuda pactio), they were booked accordingly in the books of the people involved in the contract.

To that effect, accounting books could be, and were fully used, in a court of law. For example, this is how Cicero was able to prove Verres’s illegal ‘money laundering’ by examining both Verres’s and his compatriots’ accounting books (as mentioned in the ‘Interest Rate’ section). In essence, Roman accounting standards were taken very seriously, and any ‘mistakes’ in the books could be punished according to the reason of the mistake (depending if it was accidental or intentional). The heaviest punishments could easily result in a loss of Roman citizenship or even imprisonment.

Below is a very basic overview in bullet form of various personal Roman bookkeeping terms and the terms that were used for books (with the possibility of minor translation errors):
Introduction

- In general, the codex accepti et expensi was the daybook (cash codex) while the codex rationum was the ledger (account book). The inventory was kept in the brevarium (or libellus).¹²¹¹
- The Roman ratio was split up into two parts. The tabulae (pagina) accepti and the tabulae (pagina) expensi. The terms accepta et expensa which the Romans used can be substituted by debet and habet, which means ‘debit and credit’. The name of the person involved and the date were noted at the top.¹²¹²
- The Romans did not only attribute income and expenditure to cash, but also to any increase or decrease of wealth. The Romans would note the value of their lands, works of art, furniture, or anything which was of any worth in their books. These were then usually placed under accepta, but accepta has to balance expensa irrespective of what kind of capital increase was being referred to.¹²¹³

Brevarium (Libellus)

- The brevarium or libellus (the distinction is not entirely clear) contained the current inventory (both living and non-living). This book was kept up-to-date in case of changes in inventory.¹²¹⁴

Codex accepti et expensi

- The codex accepti et expensi was basically the daybook and it included all of the income and expenditures, i.e. the ratio in the cash codex was for an overview of income and expenditure of money (accepta et expensa pecuniae).¹²¹⁵ All cash inflows were noted in the tabulae accepti, and all cash outflows were noted in the tabulae expensi.¹²¹⁶

Codex rationum

- The codex rationum held the personal ledger which included all of the outgoing/incoming invoices for the business,¹²¹⁷ i.e. it noted the debit and credit balance for the individuals with whom business was conducted.¹²¹⁸ These invoices or accounts came to be known as tabulae or rationes. As such, the codex rationum was the current account ledger, and inasmuch that it also
contained the inventory account, it was used as the general ledger for the accounting of the household. This codex did not contain cash transfers, other than any debts that were outstanding on a contractual basis (obligationes, stipulationes debitorum).\(^{1219}\)

- The *codex rationum* could contain all kinds of transactions that were able to change the wealth of the individual. These could be: purchase/sales, donations, inheritance, etc.\(^{1220}\)

- There were various types of *ratio* which were part of the codex. For example, in the agricultural business one could find the *ratio argentaria* (bank account), *ratio praedii* (real estate account), *ratio pecudis* (cattle account), *ratio pabularis* (fodder account), *ratio frumentaria*, *vinaria*, *olearia* (grain, wine, oil accounts), etc.\(^{1221}\)

Conclusion:

- The *ratio* in the cash codex was for an overview of the income and expenditure of money (*accepta et expensa pecuniae*), and the *ratio* in the current account codex was for an overview of the debt conditions (obligationes, stipulationes debitorum). These two were split by the above mentioned books, and additionally within each book by *accepta* and *expensa* in the *ratio*. The difference, or the *reliqua* (balance) between these two in the cash codex equalled the amount of cash available, and the balance in the current account codex showed either the debit or credit.\(^{1222}\)

This examination is very brief and it has been considerably simplified. Furthermore, it is clear that the existence of a daybook and a ledger(s), and an understanding of the concept of debit and credit, highlight the sophistication inherent in Roman accounting: why Finley (among others) denies any such notion is not clear. Judging from how the system functioned, it would have been possible for Romans to calculate the profit of any business enterprise, even if it were only part of a larger whole. In fact, beyond Beigel and Temin, even the Cambridge Dictionary of Classical Civilization mentions that “Roman accounting…could nonetheless have allowed the profitability of larger economic enterprises to be assessed.”\(^{1223}\) Furthermore, essentially all Romans conducting business kept accounting books, be they craftsmen,
traders, landowners, workshop owners, etc. This means that they were capable of keeping a record of their business and calculating profit (or loss), which yet again not only implies a level of sophistication (admittedly not that of modern levels, but definitely not ‘rudimentary’) but also does not pose a hindrance to a full engagement in a capitalistic market economy.

Although it is now clear how the individual Roman kept his books, a final aspect to this investigation shows that a difference existed in accounting practices and standards which depended on the nature of the individual. For example, argenarii kept slightly different books and had different legal stipulations. As such, some specifics will also be highlighted in bullet form:

**Argentarii**

- The argentarii kept various books which were even more complicated than the typical paterfamilias, primarily because they also had to manage money belonging to other people. The accounts of each customer were naturally kept separate.

- The books of the argentarii were very important for legal proof, and as such, if the argentarius either did not give over his books or falsify information, the argentarius was liable for any damages and could even be punished in various ways.

- The manner in which the argentarii conducted their business, as well as their ‘advanced’ current account (checking account) and deposit trafficking, made the requirement to use a special codex with open accounts for bank customers (codex rationum) a logical evolution. The same way in which the banker kept his customer accounts (mensae ratio) open, the customer also kept his bank account (argentaria ratio) in his own books open.

- Even though in some cases bookkeeping disappeared from the homes of certain citizens, it was the argentarii who maintained this practice and as a result conducted the bookkeeping for many of their customers. Incidentally, the argentarii also managed their customer’s money. Many large and small transactions went through the hands of the argentarii. Transactions could easily
be performed by simply booking them (especially if both customers used the same banker), as there was no need for an actual money transfer.\textsuperscript{1229}

It is evident from the plethora of evidence that Roman bookkeeping was sufficiently progressive and not rudimentary, and that it was even ‘flexible’ enough for specific standards to apply to specific jobs, such as that of banking. Furthermore, even though no examination will be performed, it is also clear that accounting books belonging to municipalities (e.g. \textit{kalendarium} \textsuperscript{1230}), the Roman state\textsuperscript{1231}, partnerships (\textit{tabulae societatis}), and corporations (\textit{tabulae publicae})\textsuperscript{1232} all had their own peculiarities. Additionally, in respect to the sheer size of these, and acknowledging that some of the large private enterprises had vested business interests in various locations, it was normal to keep books at each ‘local’ location, and to then pass (copy) the information to the central location wherever the main administration overseeing the principal books was located. This way the interested person ie. the owner, stock-holders, emperor, etc., could easily find out what was happening to the ‘enterprise’ as a whole.\textsuperscript{1233} Once more, it is not clear how scholars are able to believe that something of this nature is possible in a subsistence economy because accounting on this level can only exist in a capitalistic market economy.
Inflation and GDP

Roman Inflation

It has already been mentioned at several points in this paper that the Roman economic system definitely showed inflationary tendencies, and since it is clear that the economic system was a capitalistic market economy an attempt can made of calculating the rate. As described in the money section, various coins of the lowest denominations were phased out over time because they were not needed anymore, additionally, according to Reece: “On the matter of inflation, coin finds from Roman sites give a fairly clear picture of change. On any site occupied in the reign of Augustus the most commonly lost coin is the as (one-quarter of a sestertius). By the reign of Trajan (98-117) the most commonly lost coin is the sestertius, and by the reign of Septimius Severus (193-211) the denarius is the most common loss…It is reasonable to suggest a fourfold inflation during the first century A.D. and a similar inflation during the second century. In the third and fourth centuries inflation moved much more quickly.” Furthermore, the fineness of silver coins was gradually reduced, such that they initially had a fineness value of 98% at the time of Augustus, and by 192 A.D. this had dropped to 74%. This decline in fineness became even more prominent in the 3rd century A.D., such that by 250 A.D. it was only 40%, and eventually in 270 A.D. slightly less than 4%. This means that in a time-span of roughly 300 years the silver content of the denarius went from almost purely silver, to a resembling only a hint of silver. The changes that were made to the other denominations naturally corresponded to the changes in silver. As such, in an effort to examine inflation and before any other relevant aspects are discussed, there will be an attempt to calculate inflation by using Roman military pay as a basis.

It is easiest to use military salaries, because as explained in the military section, they clearly seem to display inflationary tendencies. Furthermore, there is little accessible evidence that would be suitable for this thesis which would even remotely allow for calculations to be made, and which could be taken from any other part of the economy. However, it has to be understood that this is more of an exercise than an actual attempt to prove inflation (since the military section has already explained this),
because the salary figures do not tell the whole story, especially considering the fact that there were ‘hidden’ - but acknowledged - subventions by the state and/or the emperors. Additionally, without exact knowledge of concomitant changes in prices (i.e. the basket of goods) the results could be skewed either way. The aims of this exercise will be not only to calculate monetary inflation in terms of *denarii*, but also to examine the changes in amounts of silver or gold relative to the salaries (i.e. to assume for the purposes of the exercise that the salaries were in theory either purely in silver or in gold). The calculations will be based on information that is contained in the historic money section regarding changes in weight, relative values of both gold and silver, and relative values between coins, in particular the 25:1 ratio of the *aureus* to the *denarius*. With regard to the time-spans taken, they correspond to the raises in pay and it will be assumed that the coins paid at the time of the raise are those which were freshly minted, as the economy would have had a large variety of different coins with a different actual weight and metallic content, making calculations like this impossible. Furthermore, because all military salaries increased according to the exact same ratio, it is sufficient to examine the salary of a regular legionary, a *miles legionis*.

The first table (Table 10) depicts the weight of the *denarius* and *aureus* and the amounts of the actual metal contained within, with historic adjustments for the debasement of the *denarius*. The second table (Table 11) depicts the salary of the *miles legionis* in terms of *denarii*, and the subsequent amount of silver (both actual and ‘official’ amounts will be calculated) and gold this would have corresponded to. The third table (Table 12) depicts the ‘inflation’ of the monetary aspect (*denarii*), the official silver (as actual and official differences were negligible in the long run) and gold; all are derived from the second table.

Table 10:

<table>
<thead>
<tr>
<th>Date</th>
<th>Base silver per Roman <em>libra</em> ratio (322.5g)</th>
<th>Amount of silver in <em>denarius</em> adjusting for debasement (g)</th>
<th>Gold per Roman <em>libra</em> (322.5g) ratio</th>
<th>Amount of gold in <em>aureus</em> (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augustus</td>
<td>1/84</td>
<td>3.84 * 99% = (3.76)</td>
<td>1/40</td>
<td>8.06</td>
</tr>
</tbody>
</table>
As is evident, there is a clear increase not only in *denarii*, but also in the total amount of silver or gold the soldiers would be receiving if they could somehow directly translate the *denarii* into either of the precious metals. Judging from this, it would seem that the real worth of the pay was truly increasing, but it is hard to judge without any additional numbers from a common basket of goods. Regarding this topic, an interesting but also slightly confusing side-note, is observed by Reece who claims that the “price of gold, as quoted in *denarii*, leads on to the purchasing power of gold which seems to have stayed remarkably stable throughout the Roman inflation…the cost of a soldier, or military pay, is likewise fairly stable if judged in terms of gold.”¹²³⁶ The quote is confusing, obviously from the fact that in terms of gold the salary was actually increasing, which can be inferred from the larger amounts of gold being received. Even if Reece’s method of comparing the number of *denarii* in terms of 1 *libra* of gold is conducted, as depicted in the following table (Table 13), it becomes clear that the soldiers were definitely getting more gold (except for the period between 84 and 197 A.D.).

### Table 11

<table>
<thead>
<tr>
<th>Date</th>
<th>Salary in <em>denarii</em></th>
<th>Actual % of silver in coin</th>
<th>Actual silver content per coin (g)</th>
<th>Total salary in silver via actual content (g)</th>
<th>Total salary in silver using ‘official’ values (g)</th>
<th>Total salary in gold using ‘official’ values (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augustus</td>
<td>225</td>
<td>99</td>
<td>3.76</td>
<td>846</td>
<td>864</td>
<td>72.5</td>
</tr>
<tr>
<td>84 A.D.</td>
<td>300</td>
<td>98</td>
<td>3.26</td>
<td>978</td>
<td>(3.29)*300 = 987</td>
<td>86</td>
</tr>
<tr>
<td>197 A.D.</td>
<td>600</td>
<td>56.5</td>
<td>1.81</td>
<td>1086</td>
<td>(1.69)*600 = 1014</td>
<td>172.1</td>
</tr>
<tr>
<td>212 A.D.</td>
<td>900</td>
<td>51.5</td>
<td>1.66</td>
<td>1494</td>
<td>1386</td>
<td>232.2</td>
</tr>
</tbody>
</table>

### Table 12

<table>
<thead>
<tr>
<th>Time-span (yrs)</th>
<th>Monetary inflation (%)</th>
<th>Silver inflation (%)</th>
<th>Gold inflation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>111 (27BC-84AD)</td>
<td>0.26</td>
<td>0.12</td>
<td>0.16</td>
</tr>
<tr>
<td>113 (85-197AD)</td>
<td>0.62</td>
<td>0.02</td>
<td>0.62</td>
</tr>
<tr>
<td>15 (197-212 AD)</td>
<td>2.75</td>
<td>2.11</td>
<td>2.01</td>
</tr>
</tbody>
</table>

As is evident, there is a clear increase not only in *denarii*, but also in the total amount of silver or gold the soldiers would be receiving if they could somehow directly translate the *denarii* into either of the precious metals. Judging from this, it would seem that the real worth of the pay was truly increasing, but it is hard to judge without any additional numbers from a common basket of goods. Regarding this topic, an interesting but also slightly confusing side-note, is observed by Reece who claims that the “price of gold, as quoted in *denarii*, leads on to the purchasing power of gold which seems to have stayed remarkably stable throughout the Roman inflation…the cost of a soldier, or military pay, is likewise fairly stable if judged in terms of gold.”¹²³⁶ The quote is confusing, obviously from the fact that in terms of gold the salary was actually increasing, which can be inferred from the larger amounts of gold being received. Even if Reece’s method of comparing the number of *denarii* in terms of 1 *libra* of gold is conducted, as depicted in the following table (Table 13), it becomes clear that the soldiers were definitely getting more gold (except for the period between 84 and 197 A.D.).
Table 13

<table>
<thead>
<tr>
<th>Date</th>
<th>Silver/Gold Ratio</th>
<th>Exchange # of denarii in terms of 1 libra of gold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augustus</td>
<td>11.92</td>
<td>1001</td>
</tr>
<tr>
<td>84 A.D.</td>
<td>11.48</td>
<td>1125</td>
</tr>
<tr>
<td>197 A.D.</td>
<td>5.89</td>
<td>1124</td>
</tr>
<tr>
<td>212 A.D.</td>
<td>5.97</td>
<td>1250</td>
</tr>
</tbody>
</table>

As such, it is unclear what Reece is referring to, although he is most probably focusing more on the 3rd century A.D.

The findings of the calculations have raised more questions than they have answered. It seems that not only was the monetary inflation matched by an increase of theoretical gold and silver which the money could be translated into, but both silver and especially gold, show a clear increase beyond purely matching levels. The only unsurprising aspect is the silver to gold exchange ratio which clearly shows the appreciating value of silver in terms of gold, as mentioned in the money section. For now the answer to the inflation question will be left open, as other examples of inflation will be examined.

According to Temin and Kessler, citing Rickman, wheat “prices at Rome were subject to slow inflation…a view that has been supported by Duncan-Jones.” In more detail: “Rickman argued that the price of wheat at Rome was between three and four HS per modius in the late Republic, rising to five to six HS in the early Empire. Duncan-Jones confirmed the general price level; Rathbone confirmed the inflation, at least for Egypt” The inflation of the wheat price from the Republic into the Principate seems to have been also evident in the salaries as well, as mentioned by Bartomsky: “If we suppose that he [an average labourer] was able to find employment on 350 days of the year, his earnings would be 1,050 sesterces per annum at 3 sesterces a day. Similarly, Well’s supposition of a wage of 4 sesterces a day in the first century A.D., would have meant an annual income of 1,400 sesterces for 350 days’ work.” Not only Rome, but also Egypt seemed to have experienced inflation, according to Zelener: “The rate of inflation that can be calculated primarily..."
from Egyptian price data is between .5% and 1%, not incomparable to the .5% rate of inflation during the medieval price revolution. However, inflationary tendencies seem to intensify in the late second and for much of the third century, suggesting that the demographic explanation is not applicable in this case [(in reference to the loss of life from the plague)].”

Even more evidence is mentioned by Goldsmith (most probably for Egypt, but not entirely clear): “The only price index that has been found puts the increase between the reign of Antoninus Pius and Marcus Aurelius, i.e. for a period of about 25 years, at between seven and 13 percent…i.e. at between 0.3 and 0.5 percent per year. It is likely that the average for the 150 years before the reign of Antoninus was considerably smaller. The sharp increase in prices started only, and suddenly, at the close of the second century AD, but then may have tripled the price level within 30 years.”

Even though these examples cannot be entirely relied upon for purposes of discovering the truth behind inflation, they do at least show that there was some form of inflation - even from the time of the Republic entering into the Principate - and that it definitely increased at the end of the 2nd century A.D. The inflation and ensuing debasements from the time of Marcus Aurelius are easier to understand because they marked the beginning of a period of ‘constant’ external pressure from possible barbarian incursions (and by the mid-end 3rd century internal battles were a factor too), which meant that state expenditure would have raised significantly and trade would have probably suffered due to the ‘warlike’ times. The only question of worth relates to the time between 165 A.D. and the barbarian incursions, as it is the time period of the plague. The fact that the plague killed so much of the population should have caused an increase in prices, and yet Goldsmith claims that from the reign of Antoninus Pius to Marcus Aurelius, which corresponds exactly to this time-period, inflation was at 0.3 to 0.5% a year: this is actually not much more different from the previous century and a half. Looking at the silver currency between 165 A.D. and 180 A.D. there is actually no change (in fact for a brief period from 168-170, the purity was increased to 82% before dropping down again to 165 A.D. levels of 79%). It seems as if the plague hardly affected the economy at all in terms of inflation and debasements, and yet several million are supposed to have died (not to mention how many must have been sick). The answer must probably lie in the cessation and drastic decline of mining during that period. In essence, the sudden jump in supply of
currency per capita due to the deaths of so many people was probably offset by the equally sudden drop in mining. In the short term this seems to be what happened; however, in the long term, especially once the barbarians started encroaching on Roman soil, the economy found itself in trouble as it had effectively not only lost taxpayers, (thereby a decrease in taxes) but it also experienced a significant decline in the output of precious metals while state expenditure was about to increase as a result of the extended defensive military campaigns. As such it is once more clear, generally speaking for the time period in question, that there is little evidence of inflation harming the economy and only ‘drastic’ events forced the economy to enter into a heavy spiral downwards.

However, this is not to claim that all parts of the economy were running perfectly. Irrespective of the fact that the vast majority of the provinces seemed to be experiencing their economic peaks during the 2nd century A.D., Italy was having problems during this period. Furthermore, as this paper has implied, there seems to have been some ‘general’ economic problems towards the end of Hadrian’s reign; however, due to the uncertainty of exact timing it could have corresponded to the period as early as the time of the plague. The point to remember, however, especially in light of what has been discovered in this section, is that even if there were some economic problems before the plague struck then they could have resembled the problems that occur in the cycles of any economic system – there could have even been a momentary downward cycle - but to fully explore this issue would go beyond the tenets of this paper.

As a side-note and as a reminder, the discussion here is purely an exercise, because calculating inflation on the basis of military salaries is nigh to impossible which is partially due to the ‘hidden’ subventions (and the lack of equivalent prices for a ‘basket of goods’), and partially due to the fact that if another table was to be constructed to show how the debasement affected the amount of silver over a yearly time-span and not only when the salaries were increased, it would show a different pattern. For example, between Augustus and before Domitian increased the salary to 300 *denarii*, when the purity of silver was at 90% in the year 81 A.D., this would have only corresponded to 680 grams of silver, which is some 200 grams less than what was the case at the time of Augustus or when Domitian increased the salary. Even in
terms of gold, as far back as from 64 A.D., the soldiers would have been receiving some 10 grams of gold less. This aspect is interesting to note since according to Goldsmith; “Given the political strength of the military it is most unlikely that they would have stood for any noticeable reduction in their real pay and hence in their standard of living.” It is clear, however, that in terms of both gold and silver and for a period of some 20 years (from Nero’s reform), the soldiers were receiving ‘less’: why would they have accepted such an ‘obvious’ loss over such a long period? One answer is naturally subventions; however, as the Roman military section shows, there is little evidence of subventions between the period of Nero and Domitian. However, during this period the sanitization efforts conducted by Vespasian lend credulity to the whole issue since the real wages would have probably dropped as a result of all of the damage to the economy which the civil war inflicted. In general, however, there was probably no attempt to actually have the monetary salary completely correspond in a constant manner to the theoretical amount of precious metals since the currency was fiduciary to a certain extent - as explained in the ‘Money’ section. As long as there was some sort of ‘relative’ attempt to keep the monetary salary connected to the changes in precious metals, the system would have functioned. This aspect is easily attested for since the population did not have any problems using the silver coins until the 3rd century A.D.; however once again, it is hard to conclude anything from such scant evidence.

**Roman GDP**

In a similar regard to calculations of inflation, calculations of GDP or GNP are virtually impossible to conduct with the scant evidence available. Attempts have certainly been made, and they will also be made here; however, once again this will serve more as an exercise which will try to clear up some confusion or to raise the right questions, rather than an actual attempt to prove any specific value, because it falls outside of the scope of this thesis to do so. For reference purposes, some examples of attempts to calculate the GDP/GNP will be mentioned:

Goldsmith calculates that the total aggregate national product at the time of Augustus’s death (14 A.D.) is 20 billion *sestertii*, which according to his population count of 55 million, corresponds to approximately 400 *sestertii* per person, or 31g of gold equivalent. His calculations are based on an attempt to calculate the average
income and expenditure of an average person. He lists these in the following table (Table 14).

Table 14:

<table>
<thead>
<tr>
<th>Derivation of Gross National Product per Head, Roman Empire AD 14</th>
<th>Estimates (rounded)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. From expenditure side</strong></td>
<td></td>
</tr>
<tr>
<td>1. Wheat consumption per year (modii)</td>
<td>37(\frac{1}{2})</td>
</tr>
<tr>
<td>2. Wheat price per modius (HS)</td>
<td>3</td>
</tr>
<tr>
<td>3. Wheat</td>
<td>112</td>
</tr>
<tr>
<td>4. Foodgrain</td>
<td>130</td>
</tr>
<tr>
<td>5. Food (HS)</td>
<td>200</td>
</tr>
<tr>
<td>6. Total consumer</td>
<td>350</td>
</tr>
<tr>
<td>7. Total national expenditure (HS)</td>
<td>380</td>
</tr>
<tr>
<td><strong>II. From income side</strong></td>
<td></td>
</tr>
<tr>
<td>1. Average daily labor compensation (HS)</td>
<td>3(\frac{1}{2})</td>
</tr>
<tr>
<td>2. Working days per year</td>
<td>225</td>
</tr>
<tr>
<td>3. Average annual labor compensation (HS)</td>
<td>790</td>
</tr>
<tr>
<td>4. Dependency ratio(^a)</td>
<td>2.5</td>
</tr>
<tr>
<td>5. Labor income per head of population (HS)</td>
<td>315</td>
</tr>
<tr>
<td>6. Step-up for non-labor income</td>
<td>1.20</td>
</tr>
<tr>
<td>7. Total income per head (HS)</td>
<td>380</td>
</tr>
</tbody>
</table>

\(^a\)Inverse of share of labor force in population.

In a similar format, Hopkins also attempts to calculate the GDP for the first century A.D., by first attempting a minimum GDP calculation in respect to what would be considered a ‘subsistence’ minimum. Using the population of 54 million, Hopkins comes to a minimum GDP of some 9 billion HS,\(^{1245}\) and “a guess of actual GDP in the range of 12-14.5 billion HS.”\(^{1246}\) This corresponds to a minimum GDP per capita of 166 HS and an actual of 222 to 267 HS.

The next step in GDP calculations is conducted by Zelenar, who used Hopkins as the basis of his calculations, but tries using the Quantity Theory of Money to do so. In essence Zelenar writes: “Since the Roman economy had limited development in the secondary and tertiary sectors, the substitution of Y for P and T poses less of a methodological problem than for modern economies. Initially, this quantity can be set equal to 12 billion HS, the lower estimate of actual GDP proposed by Hopkins. Although reconstructions of the Roman coin supply remain problematic since there is no consensus for the number of coins produced per die, the estimates of Duncan-Jones
may be assumed to be reasonably close. These amount to 20 billion HS in the mid-
second century, consisting of about 60% in gold, 30% in silver and 10% in bronze.
Gold coins were probably used for transfer payments and large-scale transactions so only the 8 billion HS in silver and bronze need concern us for the most everyday transactions…we can designate the silver and bronze coinage as M1 and the combination of all three types of coinage as M2. This division mirrors the emphasis on differences in liquidity between the financial assets that constitute the equivalent measures of money supply in the modern world.” 1247 In essence, therefore, according to the most basic principle of the quantity theory “both money supply and velocity of circulation relate to nominal GDP [(M x V = nomGDP)]” 1248 Zelener, estimates that in around 160 A.D.(before the plague) in a population figure at around 80 million, 1249 the nominal GDP could have been close to 40 billion HS while the real GDP (after accounting for inflation between .5 and 1%) was around 15 billion HS as inferred from the graph (Table 15): 1250

Table 15

This corresponds to a nominal GDP per capita of 500 HS and a real GDP per capita of 188 HS.
The problem with all of these calculations is that they actually seem too low, in particular both Hopkins and Zelener (not surprising since he used Hopkins as a base). Goldsmith was probably much closer, and evidence for this arises out of the time of Vespasian. As already mentioned in the ‘State and Economy’ section, Vespasian needed some 40 billion HS to sanitize the economy after the civil war, and this figure proves crucial in trying to calculate the GDP. In essence, Zelener cannot be correct with his assessment as it is inconceivable that Vespasian required a sum of 40 billion in 69 A.D just to sanitize the economy as a result of the duress of the civil war (implying a GDP well in excess of 40 billion), while Zelenar calculates the entire GDP in 160 A.D. to be 15 billion. Unless the GDP took a massive nosedive during that period the answer must lie in a different direction. It is naturally possible that the 40 billion HS is a mistake; however, it is a genuine number from antiquity that we do have and it would be hard to believe that Seuton, even if he chose an inflated number, would chose a number that is so obviously inflated. More evidence that 40 billion could be correct comes from the fact that both Sueton and Dio (as evidenced by Scheidel) mention some 2.7 billion HS found in public (actually possibly imperial) treasuries in 37 and 161 A.D. respectively. If 2.7 billion HS could actually only be the money that at some point found its way into a treasury, what does that speak of the remainder of the economy? It becomes clear that Zelener’s estimate must be too low, and that Goldmith’s is more likely, as he refers his number to the time of Augustus (although it would still imply a large growth from a GDP of 20 billion to Vespasian some 50 years later, requiring 40 billion to sanitize the economy).

It falls outside the scope of this paper to properly calculate the GDP; however, an attempt to use historical velocity ratios can be made. As Zelenar explains, if the whole Roman money supply is taken into account (M2) and the velocity if known, an attempt at a calculation of GDP can occur. The actual velocity in the Roman Empire is unknown, and it can probably not be calculated. However, in their paper titled: “The Long-Run Behavior of the Income Velocity of Money in Spain, 1850-2000”, Carreras and Garcia-Iglesias discover that in terms of V2 income, velocity is much higher the less advanced and sophisticated the banking system is. For example, “there is evidence of income velocity around 10-11 range for the United States in the early 1820s…For England the highest level recorded in literature – 9.3 – goes as far back in the past as 1561…there is room to suggest that the Spanish levels could have also
been in the range of 10 by the 1830s and the 1840s...The high US levels are related with a period of acute scarcity of commercial banks – to be solved in the years immediately afterwards.”

More evidence is mentions in that “on the very long term, V2 declines. It is even possible to stylize the development of V2 as a ‘monetary transition’, from a regime of high pressure – monetary scarcity – to a regime of low pressure – monetary abundance. From this angle, the monetary transition could be considered one more element in economic modernization. The earlier the monetary transition, the most advanced a country is. To find early high levels for English velocity is very sensible. They should also come out for eighteenth century France. The likely Spanish maximum around 1840 is also very much in line with other evidence pointing to an early start for Spanish economic modernization. The United States have their maximum in the 1820s, just before the creation of the First and Second Banks, and the banking boom they triggered.”

In essence, this means that the country or countries closest to Roman sophistication in terms of financial and banking structure should be examined to get a rough idea of the velocity. Since this aspect falls outside the scope of this paper, it nonetheless becomes evident that velocity was at minimum somewhere in the range of 3 to 4 as evidenced by: “Around 1870 the level of the Spanish velocity is between 3 and 4, very similar to some other countries (Italy, Norway, Japan, and Australia). There are countries like the UK and France with lower levels (Germany is in between these two groups). Other countries show higher values: the US, Canada, Sweden, and Denmark. The Spanish series starts in 1850 at higher levels - between 7 and 8”

Multiplying the total money supply of 20 billion HS in 160 A.D. by the velocity of 3 to 4 gives GDP values of 60 to 80 billion HS, which corresponds more closely with evidence known directly from Roman sources. Naturally, it is not a perfect calculation and there is a lot of chance for error; however, the method could prove to be more plausible than previous attempts to calculate GDP. Ultimately, an in-depth study of direct comparisons between financial structures of various countries are needed in order to synthesize the correct velocity, and once this occurs it should be easier to calculate a far better estimate of Roman GDP. One thing, however, is certain: Roman GDP has been undervalued, and irrespective of the fact that no conclusive figures have been brought forth, this fact should still be evident.
Conclusion

It should be evident from the research conducted here that during the Principate, the Roman economy was a capitalistic market economy and that it reached its peak roughly by the mid-2nd century A.D. A large variety of aspects pertaining to the economy have been examined, contrasted, and ultimately found to definitely belong not only to a capitalistic market system, but to one that is comparable with the arising European capitalistic economic systems of the 17th-19th centuries. Exactly to which country, and what period in those centuries the Roman economy is most comparable to, is a question that goes beyond the tenets of this thesis; however, as a general rule it would depend on the particular aspect of the economy in question: this paper has most certainly tried to achieve this at various intervals. Furthermore, it is the firm belief that it is no ‘accident’ that during the centuries after the decline and fall of the Roman Empire, the regions that tended to exhibit any form of sophistication - be it during the Renaissance (not named the ‘re-birth’ no reason), or even those countries which attained capitalism first - all of them were in truth former regions (or at least on the borderlines) of the Roman Empire. In essence, in many regards these regions ‘owe’ their eventual economic sophistication in large part to the work of the Romans (and the Romans owe it to the Greeks, etc.) irrespective if there was no ‘direct’ link. The point is that capitalism and the market economy were not ‘discovered’ in the early modern period: they were simply re-discovered. As such, it is finally time to lay down the ghost of subsistence to rest and time to understand that from a literary perspective the Roman economy has generally been undervalued in its sophistication, and in relation to this, the economies of early modern times overvalued. This is not to deny the great advances of the Industrial Revolution, but it is imperative to understand that its arrival took much longer than perceived. Essentially, the Romans were very possibly ‘flirting’ with industrialization for a while, as neither mechanization (water power was used to great effect, both in mines and in mills) nor various technologies (power of steam was known and experimented with) that are perceived crucial to an industrial revolution, were unknown in the Roman world.

Why the Romans did not industrialize if they had such an economy and most of the required technology, is a question best left for another research question. In fact, now that it is clear that the Romans had a capitalistic market economy, far better
calculations of inflation, GDP, sector share of labour, etc., than this paper has suggested can be conducted, because the calculations that have until now been performed by various other authors are usually based on ‘old’ and ‘unyielding’ notions of the inferiority of the Roman economy. Another example could be a full and detailed examination of all of the market forces at work regarding the decline of Italy. In relation to this, it is also evident that Rome and Italy were far kinder ‘masters’ than the colonial powers ever were, for no colonial master nation had its colonies ever either catch up, or surpass, its developments while still being part of the Empire. Unlike the European nations, the Romans exported both their knowledge and their capital to the provinces, such that at a certain point a large part of Italian production was being outcompeted by the provincial production. Perhaps the answer pertaining to the inability to achieve industrialization lies down this avenue of thinking, because at the very end of the Republic and during the early Principate, Italy exhibited the most centralized and largest factories (especially for ceramics), and also the largest corporations ever known in its history. Instead of ‘centralizing’ even more and making the factories even bigger, the process of decentralization began and many workshops came into existence in various places. In consideration of the fact that there were no or very few barriers to technological, capital, and labour movement between the Roman provinces, decentralization makes logical sense. It was probably more profitable for the entrepreneur to open up a branch workshop in another province with the purpose of either selling locally, or making production cheaper due to lower standards of living, and send the produce back to Italy rather than to expand large amounts of capital in the hope of achieving some technological breakthrough which somebody could copy as result of lacking patent laws.

Yet another possibility for research, and incidentally a question which asks why all of those researches who ever wondered about the positive and negative sides of a market economy in contrast to a centrally planned economy, never examined Roman history, for all the information is there. In essence, Roman history displays both extreme capitalism and an extreme state planned economy. The formation of market capitalism from the mid-Republic until the end of the Republic culminated into the creation of the most rapacious form of capitalism, where society was truly ruled by the rich senators and the mighty corporations. Then during the Principate, capitalism is placed under more control, which at the onset definitely aided the economy and
allowed the common man and the middle classes to flourish. This control, however, was generally increased over time, until the Emperor and the state became practically one and the same. Under Diocletian in 301 A.D. the state began dictating prices for all goods and services, and then further into the 4th century it even dictated who worked at which job, as children were forced to work in the same jobs as their parents. In essence, the Roman economic system displays a shift from one extreme to the other, and the beautiful aspect about this is that it occurred within the same country and relatively speaking within the same political system over a long period of time, which allows for specific research to be conducted. It is not clear why scholars who discuss the pros and cons of either system have never thought to look at this unique opportunity.

As is evident, the opportunities for further research are plentiful, and one can always wonder what would have happened if the Roman economy had not been hit with a plague that wiped out a significant amount of people, and that possibly also caused the ensuing incursions by the various tribes. Would the economy which seemed to have encountered some problems during, or shortly after the reign of Hadrian, been able to correct itself? Or had it finally reached the level of economic sophistication insurmountable without an Industrial Revolution? Only time and further research can tell.
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I am most certainly aware that the past few decades have seen an unprecedented economic growth and change never before achieved, and that comparisons of this magnitude are actually not truly valid. It is only for the sake of argument that such an over-simplified example has been used. Before the industrial revolution and modern financial ‘revolutions’ the economy certainly didn’t change so rapidly, but to claim that there was no change at all is what I am strictly against, and why the comparison with Germany was made.


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A number of scholars have suggested that national accounts needed extending to cover missing non-market household production. Essentially they viewed household production as a missing part of the estimates, not a separate economy. Robert Eisner and colleagues at Northwestern University conducted the most extensive work on these lines in the 1980s. Their research culminated in the book *The Total Incomes System of Accounts* (1989). Eisner’s estimates for the United States make clear the greatly expanded role, in total economic production, of households. United States GHP in 1981 was put a $1,709 billion, 37.5 per cent of the extended GNP of $4,560 billion.

Eisner calculated that one-third of economic activity in the United States today takes place within households, that is, in householding or reciprocal activity. Taxes also are large in modern societies, typically reaching one-third of marketed output in advanced industrial societies. Yet these clearly are market economies.

In modern, industrial economies almost no one produces the food that he or she eats or the clothes that he or she wears. In an agricultural economy far more than one-third of economic activity would be carried on within households. If about seventy-five per cent of the population of the Roman Empire was engaged in farming, then it is not unreasonable to suppose that over half of production was carried on by householding, rather than by market exchanges. This does not mean that almost all farmers were autarchic and isolated from market forces, while the surplus to feed urban dwellers was produced by a minority of farms. It means that most of each farm’s activities were devoted to maintaining its workforce. The historical question is how many of these farms were engaged in buying and selling produce, even if these exchanges provided only a small part of the farm’s income?


I honestly have no clue at what multiple of subsistence we exist in nowadays, the number was taken arbitrarily.


Roman Currency of the Principate, Tulane University [Online] Available at www.tulane.edu [Accessed 19 December 2007] and Scheidel, Walter “The monetary systems of the Han and Roman Empires”, Princeton/Stanford Working Paper in Classics, Version 1 (Nov, 2005), pp. 25. “Under Sulla, the respective ratio hovered around 9.6-11.7 to 1 (at 28-34 denarii per aureus…3,108-3,774g silver = 323g gold). By 50 BCE, Caesar’s conquest in Gaul had lowered the market price of gold to 750 denarii per pound, for a 8.6 to 1 ratio. The nominal standard for gold and silver coins set in 46 BCE was 1 aureus = 25 denarii, or 1 pound of gold = 1,000 denarii, for a gold/silver ratio of 11.5 to 1. Under Augustus, the aureus was issued in virtually pure gold at 40 to the pound, whereas the denarius continued to be struck at 1/84 pound, its silver content restored to 97.5-98%. Pent-up demand for fractional coinage was met by the brass sestertius (valued at 0.25 denarius or 4 asses). Made of brass (orichalcum) comprised of 75-80% copper and 20-25% zinc, the sestertius weighed 25g (with the 12.5 dupondius as half-piece). The as, at 11g, was struck of pure copper, as was the quadrans (3g). This system suggests a silver/copper ratio of 47 to 1 (176g copper = 3.76g silver). As 77.5g of copper and 12.5g of zinc equaled 3.76g of silver, silver out to have been valued at 10-11 times the price of zinc. Actual base metal market values must have been somewhat lower, to cover production costs and perhaps also to allow for some limited degree of seigniorage.”


Drexhage, Hans-Joachim and Konen, Heinrich and Ruffing, Kai “Die Wirtschaft des Römischen Reiches (1.-3.Jahrhundert): Eine Einführung”, Akademie Verlag, Berlin, 2002. pp. 37. Even though most initial research believed that only the cities, larger towns and military locations were monetized, it is increasingly becoming obvious that the rural areas were monetized as well. The question of how monetized the rural areas were, is naturally difficult to answer.


Beigel, R “Rechnungswesen und Buchführung der Römer”, Karlsruhe; G. Braunschen Hofbuchdruckerei, 1904. pp. 40. Beigel mentions that naturally the other coins also had to keep their relative ratios intact. For example, the copper coins were often changed, partially to correspond to their metallic value, and to keep their value relative to the silver coin, and to keep their nominal worth so that some money could be made from this business.


This is exactly what was inferred initially in the paper, in the sense that the 3rd century had obvious problems and that most scholars agree upon the nature of those, but these problems do not occur magically, they originate from somewhere and obviously the 3rd century is already too late for their origins.


the new gold coinage in the economy. It is obvious that gold was suitable for larger transactions and unsuitable for small. Tacitus says that the Germans living nearest the Roman Empire used silver coin because it was more useful for small transactions. The implied contrast is with the use of gold within the Empire for larger transactions.”

103 Crawford, Michael (1970) “Money and Exchange in the Roman World”, The Journal of Roman Studies, Vol. 60. (1970), pp. 46. It is important to note that according to Footnote 56 this seems to mainly apply to Republican coins.


No real statistics on this phenomenon have been found, but having lived through this time, eyewitness accounts should suffice.


In Reece’s defence, he wrote during the same time as Crawford, but Howgego wrote some 20 years later, by when more archaeological discoveries had been made. This does not however imply that later scholars automatically do a better job, one still has to examine and explain the findings correctly. For example, Reece and Crawford, who wrote during the same time, most probably could have had access to similar findings, and yet Reece was far more careful about passing any judgement on the findings, especially in those areas where little was found.

No source has been found that focuses on Rhaetia, and even though its not very scientific, no mention of any ‘monetization’ problems in Rhaetia, it will be assumed that due to its proximity to Italy, it was sufficiently monetized.


Most probably this is no accident, and it could mean that the one-eighth for the entire Roman Empire was estimated by using the U.S. census as a reference.


158 De Martino, Francesco “Wirtschaftsgeschichte des Alten Rom”, translated by Brigitte Galsterer, München, Beck, 1991. pp. 295. De Martino, who was using Alföldy’s work, does however mention that the age of 30 should be taken as a general note, not as exact fact.
170 No real data for Egypt has been found to cement this fact, but general information from all sources for Egypt tends to often mentions urban or household slaves, but almost never rural slaves. Any comments about Egyptian rural areas often tend to mention free farmers/peasants and no slaves.
172 25% of 75% is equal to 18.75%. 18.75% + 25% = 43.75%


Zelener, Yan “Smallpox and the Disintegration of the Roman Economy after 165 AD”, Columbia University, (2003), pp. 79.


$3,000 \times 14,000 = 42,000,000$

Once again it is important to note that perhaps this is not the best method of comparison, but no other 19th century nation had such a similar geographic size, population, ‘general’ structure, etc., as the U.S. in comparison to the Roman Empire. For example, comparing the entire Roman Empire to only Holland (as some authors have done; which shall be shown later) is not entirely ‘fair’ for various reasons.

Zelener, Yan “Smallpox and the Disintegration of the Roman Economy after 165 AD”, Columbia University, (2003), pp. 73.

Italy and Egypt, together, have roughly some 14-15 million inhabitants, and if 20-25% of those are urban, that means approximately 3.2 million people. If the remainder of the 40 million, attest a 10% urban ratio, it would correspond to 4 million. 7.2 million urban dwellers in 55 million corresponds approximately to 13%.


The 70% in agriculture is also attested in: Maddison, Angus “The World Economy: A Millennial Perspective”, Development centre of the organisation for economic co-operation and development, OECD, 2001, pp. 95.

The urban ratios were taken from: http://www.census.gov/population/censusdata/table-4.pdf, while the agriculture ratios for 1820 and 1890 were taken from: Maddison, Angus “The World Economy: A
Millennial Perspective”, Development centre of the organisation for economic co-operation and development, OECD, 2001, pp. 95. The remaining agricultural ratios were visual estimates derived from Figure 7 in: Ngai, Rachel L. and Pissarides, Christoper A. “Trends in Labour Supply and Economic Growth”, 2005, pp. 31.

The two tables used for the calculations are found in Maddison, Angus “The World Economy: A Millennial Perspective”, Development centre of the organisation for economic co-operation and development, OECD, 2001, pp. 95 & 248.

The differences for the years 1700, 1820 (actually 1800 for urban ratio), 1890 for the U.K and Netherlands, respectively, were: (30.7, 42.7, 22.1) and (26.4, 28.2, 30.6).

Goldsmith’s urban ratios of 9-13, correspond to 91-87 rural ratio. 91-80=11, and 87-75=12.


A good quote regarding the aspect of loaning out slaves comes from Brunt, P.A. “Free Labour and Public Works at Rome”, The Journal of Roman Studies, Vol. 70, (1980), pp. 94. “In fact, for what this is worth, there is no specific evidence that there were masters who simply kept slaves for hiring out, and if any did so in hope of making handsome profits in such a boom, they were likely to go bankrupt in times like the reign of Tiberius, when there was little public construction. Hiring was simply a matter of mutual convenience to owner and employer, when the owner had no use for a slave, perhaps a skilled man, for a particular period, but was unwilling to dispose of him permanently, and the employer had a temporary use for him, or alternatively could not find a suitable slave to buy or lacked the capital for purchase. Arrangements of this kind do not imply that the entrepreneur would not wish to own slaves he could employ continuously, or that he was able to hire slaves in large numbers for casual and unskilled work.”


No specific legal source actually claims that women were not allowed to be workers. Therefore by default they must have been allowed to work in nearly any type of job (except military and political offices), which is evidenced by a multitude sources.
The earlier mentioned slave girl apprentice weaver.


In essence they had, in German: Geschäftsfähig. Which roughly means: incapable of conducting business.


At age 12/14 they become Geschäftsfähig.


Galbi, Douglas A. “Child Labor and the Division of Labor in the Early English Cotton Mills”, Centre for History of Economics, King’s College, Cambridge CB2 1ST, 13th June 1994. pp. 13. Taken from Figure 3.


298,000/15 = 19,867 (since 62,000 is using 15 per *iugerum*) and 278,000/20 = 13,900 (since 82,000 is using 20 per *iugerum*)


Aubert, Jean-Jacques (1994) “Business Managers in Ancient Rome: A social and Economic study of institores, 200 B.C. – A.D. 250”, New York: The Trustees of Columbia University, 1994. pp. 14. In actuality the slave manager’s owner ended up being sued on the grounds that the slave manager had been conducting the barley business regularly for a longer period of time, irrespective that the slave manager had only been appointed to take care of the moneylending business. In essence, the owner was found liable since he should have been ‘aware’ of what his slave was doing, and to that effect this example is one of those ‘special’ cases where the general rule doesn’t apply.


Corroborated by Westermann, where he writes that agriculture was still primarily conducted by free individuals in: Westermann, W. L. (1915) "The Economic Basis of the Decline of Ancient Culture", The American Historical Review, Vol. 20, No.4. (Jul, 1915), pg 730-731.


Even if this were the case, it is still highly questionable if the slave workforce ever accounted for more than 50% of the total workforce.
Corroborated by Temin: “By the time of the Principate it is likely that most slaves were slaves from infancy, either children of slaves or unwanted children of free parents, since there were fewer new captives” – taken from Temin, Peter (2001) “The Labor Supply of the Early Roman Empire”, Massachusetts Institute of Technology Department of Economics Working Paper Series, Working paper 01-45 (Nov., 2001), pp. 21.


Taken from the slavery section, where Roman manumission rates were 10% in a 5-year period and U.S rates were 0.2% in a 5-year period.


Mentioned in Rostovtzeff, Michael (1930) “Gesellschaft und Wirtschaft im römischen Kaiserreich: Erster Band”, Leipzig: Quelle & Mayer, pg 157. Rostovtzeff however points out that while wages might have been low they were still sufficient enough to pay for living costs and collegia costs.


Heitland, W. E. “A great agricultural emigration from Italy?”, The journal of Roman Studies, Vol. 8, (1918), pp. 45.


Heitland, W. E. “A great agricultural emigration from Italy?”, The journal of Roman Studies, Vol. 8, (1918), pp. 50.


Heitland, W. E. “A great agricultural emigration from Italy?”, The journal of Roman Studies, Vol. 8, (1918), pp. 46.


Heitland, W. E. “A great agricultural emigration from Italy?”, The journal of Roman Studies, Vol. 8, (1918), pp. 45.


ten Brink, Candida “Die Begründung der Marktwirtschaft in der Römischen Republik”, Europäische Hochschulschriften: Reihe 5, Volks- und Betreibswirtschaft; Bd. 1686, Peter Lang AG, 1994, pp. 44.


Zelener, Yan “Smallpox and the Disintegration of the Roman Economy after 165 AD”, Columbia University, (2003), pp. 139.


The German word used is: Straßentrasse, which most probably means a Roman road without its top layer.


Drexhage, Hans-Joachim and Konen, Heinrich and Ruffing, Kai “Die Wirtschaft des Römischen Reiches (1.-3.Jahrhundert): Eine Einführung”, Akademie Verlag, Berlin, 2002. pp. 28. Only really mention one example, but it was before Hadrian’s time which is of import when examining the next quote.

Van Sickle, C. E. (1929) “The Repair of Roads in Spain under the Roman Empire”, Classical Philology, Vol. 24, No. 1. (Jan, 1929), pp. 85-86. Though dealing only with Spain, it is still interesting to note a regularity of repairs until Hadrian and then nothing, on any road until the 3rd century. Though dangerous to use only Spain as an example, it could still be relevant.


Mitchell, Stephen “Imperial Building in the Eastern Roman Provinces”, Harvard Studies in Classical Philology, Vol. 91. (1987), pp. 336-337. Even though Mitchell didn’t believe that local communities could foot the entire bill, as the earlier example of Beneventum shows, they wouldn’t have needed to, only a part of it.


653 Thornton, M. K. and Thornton, R. L. “Manpower Needs for the Public Works Programs of he Julio-Claudian Emperors”, *The Journal of Economic History*, Vol. 43, No. 2. (Jun., 1983), pp. 375. “We base the work unit on the amount of work believed to be needed to build anew the well-preserved and wholly typical (though small) temple of Maison Carree at Nimes (16 B.C.), taken to be 60 work units.”
654 Thornton, M. K. and Thornton, R. L. “Manpower Needs for the Public Works Programs of he Julio-Claudian Emperors”, *The Journal of Economic History*, Vol. 43, No. 2. (Jun., 1983), pp. 376, and Figure 1 is also from this page.


Crystal Links, Ancient Roman Navy [Online] Available www.crystalinks.com/romenavy.html [Accessed 19 December 2007] and partially corroborated by the fact that during the 1st Punic War, for some 120 ships, 44,000 free rowers were needed: Nofi, Albert A. “Recent Trends in Thinking about Warfare”, The CNA Corporation, 2006, pp. 28-31. Even though later imperial ships might have been generally smaller, the number was much higher, and as such the range of 50,000-100,000 does not sounds implausible.


741 Alpe, Michael "Das nachrepublikanische Finanzsystem: Fiscus und Fisci in der früheren Kaiserzeit", Berlin; New York; de Gruyter, 1995. pp. 73. Taken from Footnote 237.


Collins, Steven “As it was in the days of Noah”, pp. 14.


Collins, Steven “As it was in the days of Noah”, pp. 15.


Collins, Steven “As it was in the days of Noah”, pp. 14.


Charles, Michael and Ryan, Neal “The Roman Empire and the Grain Fleets: Contracting out public services in antiquity”, Queensland University of Technology, 2006, pp. 17.
902 http://www.fordham.edu/halsall/ancient/periplus.html the example is found under number 49.
917 That the Roman Empire had Capitalism will be proven in a later section.

Termin also in the footnote quotes from “Finley (1973, 118), argued that, “neither the city nor the emperor saw anything improper in allowing the money to lie idle.” This inference flies in the face of the obvious effort by both Pliny and Trajan to find a productive use for the accumulated tax revenues.”
930 ten Brink, Candida “Die Begründung der Marktwirtschaft in der Römischen Republik”, Europäische Hochschulschriften: Reihe 5, Volks- und Betreibswirtschaft; Bd. 1686, Peter Lang AG, 1994, pp. 183. Ten Brink uses the term oligarchy, and the usage of this word can be debated, but in essence, this applies generally to the senators and the equestrians.
932 Most probably due to various ancient sources which complain about various faeneratores being usurers; however, this does not necessarily imply that all faeneratores are usurers.
933 There are various aspects of ‘banking’, but the private individuals were primarily involved in the moneylending business.
936 Much the same as today, it still often possible to find loans taking place between family members and friends in modern western capitalistic nations.
961 Beigel, R “Rechnungswesen und Buchführung der Römer”, Karlsruhe; G. Braunschen Hofbuchdruckerei, 1904. pp. 217. This page is where points 2 to 10 are listed.
967 Agreed upon in: ten Brink, Candida “Die Begründung der Marktwirtschaft in der Römischen Republik”, Europäische Hochschulschriften: Reihe 5, Volks- und Betreibswirtschaft; Bd. 1686, Peter Lang AG, 1994, pp. 184. ten Brink mentions argentarii being used as 'paying agents'.
The “is likewise called permutatio” refers to the fact that exchange of foreign coins was also called permutatio.


Not calculating per capita, as the numbers would be heavily skewed.


It is not clear, however, how much this is true for Augustus’ grandfather, but, generally it must have been possible.


In the first instance it may seem that what various primitivists have been accused off initially in this paper, of too often using examples from the Republic and applying it to the Principate to disprove any economic sophistication, is now being done vice versa, is not the case. Generally the early Principate is seen as an economic improvement from the Republic, and this paper in itself has displayed this at various times, so it would be more logical to assume that conditions improved from the Republic into the early Principate and not vice versa. In essence, unlike some authors, this paper does not claim that there was no change and that conditions were always static. It is clearly the intention here to show that conditions improved during the early Principate, and what will eventually be shown, that by the end of the 2nd century A.D. there most certainly was a reversal. As such, the usage of examples from the Republic to prove a point during the Principate, in this section, is not an attempt to hold various authors to different standards. The standards apply to all equally.


The example of one these “master contracts” loaned out 6,926,852 sesterces, which was 20 times Columella’s investment into land.


Verboven, Koenraad, “Status for sale. How Roman aristocrats (should have) stopped worrying and learn(ed) to love (the) market. (1st c. BCE – 3rd c. CE)”, working paper, pp. 22.
In truth Pliny ended up remitting some money back to the merchants, but not because they couldn’t pay or didn’t want to. He did it because of his ‘nature’ and according to his own business sense, in that he wished to continue a fruitful business with the same merchants in the future, and in fact the same merchants according to Pliny felt ‘obliged’ towards him for it.


The actual quote can be found in the section in the writing between ‘footnotes’ 20 and 21.


Gaius “Institutes of Roman Law by Gaius”, translation and commentary by Edward Poste, 4th edition revised and enlarged by E.A. Whittuck, Oxford, 1904. There is no mention in any part of the book, that cessio bonorum is only granted to status equals of the upper classes.


Beigel, R “Rechnungswesen und Buchführung der Römer”, Karlsruhe; G. Braunschen Hofbuchdruckerei, 1904. pp. 28. This is done when calculating annuities, where interest rates are calculated at the beginning of the period, not the end. So in effect if you wish to calculate how much money you have after ‘n’ amount of years with an ‘i’ interest rate it would be for normal purposes (where Kn=end result, and K0 = initial value): Kn=K0 x (1+i)ˆn. In anticipative calculations the formula would be: Kn=K0/((1-i)ˆn).

Beigel, R “Rechnungswesen und Buchführung der Römer”, Karlsruhe; G. Braunschen Hofbuchdruckerei, 1904. pp. 28. and furthermore from E Insured, Life insurance, so much part of our everyday lives, has a longer history than most would image [Online] Available at www.einsured.co.uk [Accessed 19 December 2007]

“However, Roman insurance was not limited to such simple contracts. The Romans are known to have had a table of annuity values founded on mortality data known as Ulpian’s Table, which was in use in parts of Italy until two centuries ago”.}

Beigel, R “Rechnungswesen und Buchführung der Römer”, Karlsruhe; G. Braunschen Hofbuchdruckerei, 1904. pp. 94.


Zelener, Yan “Smallpox and the Disintegration of the Roman Economy after 165 AD”, Columbia University, (2003), pp. 147.


