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Abstract

The international beer brewing industry has experienced massive changes over the last decade. Industry concentration has increased dramatically, and the leading brewer groups have globalised their operations across virtually all continents. The paper describes the development and puts it into an industrial economics framework. Based on a major data base the paper further assesses the effects of M&A strategies in the global beer industry.

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1. Introduction

Global beer consumption ran into 185 bn. liters in 2009. Wine (27 bn. liters) and spirits (19 bn. liters) trailed beer consumption, while powerful premixes (4.6 bn. liters) and cider (1.5 bn. liters) were much smaller in quantity. Beers therefore constitute the largest market for alcoholic drinks measured in quantities and the last decade has seen a considerable concentration in the industry where the top four brewery groups account for more than 40% of the production. The increasing concentration has been caused by mergers and acquisitions rather than by organic growth, and consolidation is likely to continue, if at a somewhat lower speed.

The industry structure has been changed by aggressive policies of the top ranking breweries, and by acquiring Anheuser-Busch, Interbrew assumed a dominating role with a close to 20% global market share. In 2000 Anheuser-Busch had a global market share (in volume) of 8.8% and Interbrew one of 4.0%. In 2009 the combined 12.8% of the world market had grown to 19.5%. Similarly, Miller Brewing and South African Breweries commanded 3.6% and 3.3% respectively with a combined market share of 6.9% back in 2000. Nine years later the combined share had grown to respectable 9.5%. Heineken and Carlsberg had grown from 4.3% to 6.9%, and from 1.7% to 5.9% over the same period.

The pattern is not restricted to the top breweries. While Chinese breweries were absent on the top ten lists in 2000, they now take places 5, 6 and 9. The two Japanese brewers, Asahi and Kirin, have dropped out of the list. The three Chinese fast movers are China Resources (4.5%), Tsingtao (3.1%) and Beijing Yanjing (2.5%). A more complete picture is given by the concentration figures for the years 2000, 2004 and 2009 in table 1.

Table1: Concentration rates CR 5 and CR 10 in the global brewery industry (by volume)

Year	CR 5	CR 10
2000	25.4%	37.3%
2004	36.2%	48.0%
2009	46.3%	59.3%

Note. The two concentration measures indicate the market share of the 5 or 10 largest company in the world wide industry.
Source: Euromonitor International (2010).

The unquestionable industry leader was established by the Anheuser-Busch/Inbrew merger in 2008. Even the briefest inspection reveals that the combination now covers all significant markets in the world. Anheuser-Busch where market leaders in the USA and Mexico, while Inbrew had a strong presence in Europe. In contrast, after the 2002 merger SABMiller has acquired a number of local breweries around the globe and has this way strengthened the global reach. One such example is SABMiller´s stake in China´s leading brewery, China Resources. SABMiller is a large player in many smaller markets – including growth markets in Africa and China, while Anheuser-Busch were in control of a number of large markets.

Number 3 and 4, Heineken and Carlsberg, accomplished the other major acquisition in 2008 by taking over jointly Newcastle and Scottish in the UK and dividing between them its businesses. Heineken got increased access to the British market and India, while Carlsberg expanded in Eastern Europe and in China. Of the two, Heineken is more global while Carlsberg does not include Africa or the Americas in its strategy. In the second tier of competitors, a declining trend in Japanese beer consumption has driven the local firms towards a more global positioning. For instance, in 2009 Asahi acquired a 20% equity stake in China´s no. 2, Tsingtao, from A-B InBev, while Kirin and Suntory at the same time merged into a highly diversified conglomerate with a market presence in Western Europe.

This paper highlights and explores this dramatically restructuring of the brewery industry in just 10 years where regional breweries through mergers and acquisitions became worldwide competitors. The next part draws a picture of the largest surviving breweries and their globalization strategies in this period and part 3 list the main drivers behind this development. Part 4 evaluate the performance of the four leading breweries in this globalization strategy, part 5 discuss the future possibilities for further restructuring of the industry and part 6 conclude and discuss the main results.

2. Strategy and geography – an overview

It appears from the above that "globalization" – that followed upon the opening of several major markets like China, Russia, Eastern Europe and India – has greatly impacted the international beer industry. While in 2000 most breweries were focused on the home market and a limited number of neighboring countries, there has been a race among industry leaders for global reach. The following section will put this into a business theory context, while the basic figures are produced here.

Table 2 shows a matrix of the leading brewing companies in 2000 and 2009 with regional market shares above 5%. In the table all cases are indicated in which a brewery has five per cent or a higher share of the regional beer market. The table shows how fragmented the world market for beers was in year 2000 with only local market leaders and no global leaders. Of the 10 largest breweries observed in 2000, only two breweries were present in more than one of the 6 regional markets: Heineken in three regions and Inbrew in two. All eight remaining companies were limited to having significant presence in only one region.

The last four rows of the table show how radically a decade of aggressive merger and acquisition strategy has changed the global picture. The four leading breweries have picked a strategy of going global and are now present in several local markets. A-B InBev is the leading global player and present in 5 of the 6 regional markets. SABMiller is present in four regional markets, Heineken in three and Carlsberg in two. The number of regional markets that the four largest breweries have challenged also reflects to some extent the current size of the companies. While in 2000 only Anheuser-Busch had a *global* market share in excess of 5%, now all of the four leading companies command above 5% of the world market. This globalization is reflected in tough regional competitions where Eastern Europe has become oligopolistic, and Western Europe is much more concentrated than previously, with C3 moving from 0.25 to 0.40[1].

Table 2: Regional market shares above 5% for leading breweries in 2000 and 2009

%	Asia	Eastern Europe	Middle East/Africa	Western Europe	Latin America	North America
10 leading breweries in 2000						
Anh-busch						45
Amr. Bevr.					30	
Heineken		7	8	11		
Inbrew		11		8		
Miller						18
S. African		11	35			
Coors						11
Modelo					14	
Asahi	8					
Kirin	7					
4 leading breweries in 2009						
A-B InBev	8	17		11	35	50
SABMiller		15	39		12	16
Heineken		17	18	17		
Carlsberg		25		11		

Source: Euromonitor International (2010).

Much less important than M&A has been acquisition of equity shares in other breweries. Among the four leading breweries emphasis on this expansion path differs greatly, see table 3. Heineken has been actively acquiring stakes in a rather large number of smaller companies, while the two industry leaders may have had fewer, but much larger acquisitions of equity volumes. Carlsberg has proved least active in this field. It should be noted that all four leaders have taken to this model in the Chinese/far eastern market. A-B InBev have 28.5% share in Zhujiang (but maybe

[1] For a more detailed analysis of the foreign take-over of the Eastern Europe brewing industry see Swinnen and Herck (2010)

more important a +50% share in Modelo), SABMiller have a 49% interest in China Resources, and Carlsberg a 29.7% share in Chongqing.

The industry has seen only a limited number of Joint-ventures; generally the joint ventures are based on the two parties´ existing brewing facilities in a given country and have increased efficiency (and possibly protection towards hostile acquisitions) as their main purpose. The largest of them is the MillerCoors which was established between the second largest and third largest (Miller and Coors) in the USA.

Table 3: Own volumes and proportional equity volumes, 2009

Mill. liters	Group´s own volume	Prop. Equity volume	Pct share of equity volume
A-B InBev	35,927	3,015	7.7
SABMiller	17,553	3,851	18.0
Heineken	12,651	1,057	7.7
Carlsberg	10,805	177	1.6

Source: Euromonitor International (2010).

Table 4 takes a closer look at the acquisition strategy of the four leading breweries since 1995 using the Orbis[2] database of merger and takeovers. In the period since 1997 the four companies have made a total of 57 acquisitions amounting to 82 billion EUR. A-B InBev has been the largest player in this strategy with 21 acquisitions amounting to 56 billion EUR, SABMiller and Heineken have made 15 acquisitions each amounting to about 10 billion EUR and Carlsberg only executed 7 acquisitions amounting to 7 billion EUR in the period.

Of the 51 acquisitions only a few ones have a large strategic impact. Inbrew's take-over of Anheuser-Bush in 2008 account for half the total deal value of these four large breweries in the period and beyond dispute make A-B InBev the industry leader. SABMiller's take-over of a Bavaria in 2005, Carlsberg's take-over of Baltic in 2008 and Heinekens take-over of FEMSA in 2010 were much smaller but significant in shaping the industry. An important precondition for these large acquisition strategies is the ability to raise capital to finance the takeovers. Heineken and Carlsberg have been constrained in this respect and this may partly explain why they end up losing ground. Carlsberg is owned by a foundation which until 2008 had to have a controlling share capital in the company, but then chanced to just have control through the preference shares. Heineken is family owned and its acquisition of FEMSA in 2010 reduced the share of the family to just the controlling limit.

It is also seen from table 4 that Carlsberg and Heineken were first movers in this take-over strategy with minor acquisitions but Inbrew quickly caught up with larger acquisitions in the following years. The largest amounts of deals took place in North America, Latin America and Western

[2] Orbis is a large company database product including data from various sources.

Europe, but also Eastern Europe accounts for close to 10 billion EUR. The four leading breweries are all based in Western Europe from where they go global through these acquisitions. A-B InBev misses the Middle East, Heineken miss Asia and Carlsberg miss both Middle East and North-South America. Carlsberg is therefore less global but probably best positioned for future growths as will be explored in the last part.

Table 4: Acquisitions of the four leading breweries over times and regions. Mill. EUR.

		A-B InBev	SABMiller	Heineken	Carlsberg	Total
Acquiring year						
	1997				152	152
	1998			119		119
	1999			877		877
	2000	2,915			563	3,479
	2001	3,810		169		3,979
	2002	491	223	1,164		1,878
	2003	1,210	350	1,541		3,101
	2004	4,301	814		510	5,624
	2005	1,827	6,262	567		8,656
	2006	575	262			837
	2007		529			529
	2008	41,173	816	182	5,466	47,638
	2009		837			837
	2010			4,434	292	4,726
Acquiring regions						
	Asia	786	199		397	1,382
	M. East		718	228		947
	EEU	1,861	837	1,879	5,361	9,938
	WEU	7,614	1,543	1,828	1,225	12,210
	Latin A.	4,867	6,628	4,881		16,377
	North A.	41,174	167	237		41,578
Total		56,303	10,094	9,053	6,982	82,432

Notes: The figures are all deal value in mill EURO. Only deals above ½mill EURO are included.
Source: The Orbis company database covering more than 8000 breweries worldwide.

3. Main drivers in the international brewing industry

Following the Structure Conduct Performance paradigm (Bain, 1956), the performance of the brewery industry is determined by *structural* conditions such as economies of scale in production, the characteristics of the product, market size, barriers to entry etc., as well as by the *conduct* of the firms in the industry. The paper will discuss some of the main changes in the basic conditions which have promoted the restructuring of the global industry and influenced the conduct of breweries.

The most obvious changes in the structure of the global brewery industry were political when China and India open their doors and the Iron Curtain broke down in Europe and enlarged the beer market to a real world market. These events opened new *emerging growth markets* which differ from mature markets in a number of ways, and there has been a rush to capture lucrative parts of the new markets among traditional industry leaders. Successful strategies will open up for renewed profit opportunities and there has been a rush to become a first mover in the promising new markets.

In addition it should be mentioned that in the period of globalization, i. e. post 1990, traditional factors that tend to impede globalization have been rather weak in the brewing industry. Transportation and transaction costs are falling at the same time as bureaucratic obstacles to trade have diminished (tariffs, corruption, local contents etc.). Consumer tastes across the globe seem to dove-tail, and local producers have been unable to defend their local distribution chains.

A global industry may be defined as one where the global firm´s position in one particular market is affected by its overall global position, Porter, 1980. Headquarter and subsidiaries develop skills and knowledge that can be applied across products or markets. Such skills may refer to any value creating activity (production, logistics, marketing, organization, research and development etc). Competing on a (more-or-less) world wide scale will bring economies of scale and scope and give significant strategic advantages from these activities. The terminology of Bartlett and Ghoshal (1979) defines a set of variations of multinational corporations that may be instructive: Companies may act as global firms with integrated value activities and some national responsiveness towards customers; or as multinational firms with dispersed value activities and thorough segmentation of customers; or as transnational firms with highly integrated value activities and a limited responsiveness towards national customer groups.

This approach was incidentally present in Porter (1985) where global industries are defined with respect to (1) products, (2) customers and (3) competitors. The criteria that should be met for an industry to be “global” are that the product is well-defined, that the customers have roughly the same needs, and that the same competitors are active in (all) major markets. Otherwise, in Porter´s terminology, the market will be “multi-domestic”. Therefore, to understand the track of globalization in the brewing industry and why it emerged, it is useful to take a closer look at the attributes of the products.[3]

[3] Adams (2006) gives a brilliant discussion of global versus multi-domestic markets by comparing a broad set of differences between the American and German beer markets.

First of all beer is not a weightless good and it takes up a large space in the retailing sector compared to other consumer goods. The distribution is therefore costly and a separate distribution channel for beer has evolved over time, often run by the breweries themselves and with point deliveries at restaurants, pubs and retail outlets. Further, as transportation is expensive it is more efficient to produce beer close to the market place. Transportation of beers to countries far away is close to nonexistent so very low shares of the production cross the national borders[4]. The distribution mode of beers therefore works as an entry barrier against foreign breweries and the first mode chosen for penetrating a foreign market is often to have the brand distributed by a local brewery which sometimes produces on license. Entry modes largely exclude green field FDI as acquisitions of local breweries is a more attractive road to the consumers.

Secondly, beer is a quite homogeneous but branded good. The production process has not changed for years and involves only three raw materials: barley, hops and water. There is some vertical differentiation in beer due to different qualities of barley and different ways to handle the brewing process. But typically these differences are small among mass produced beers and the production costs of producing a premium brand are only slightly above the production costs of a discount brand. Of course, automation of the brewing process has taken place over the years and the production has become more capital intensive; that, however, has not added much to product quality.

However, there is some horizontal product differentiation with variation in flavor and bitterness due to differences in the malting process of the barely and the mix of malt and hobs in the brewing process. Still, most people can't distinguish one beer from another when they face a blind test, or identify different brands within the same category of beer like lager or pilsner. Real differences are quite low both with respect to vertical and horizontal product differences and the product therefore fulfill Porters condition for a world market. For another view on the degree of product differentiation in the beer market, Persyn et al (2010)

While the real product differences are low, the perceived differences by the consumers in beer quality between brands are on the other hand very large. This reveals incomplete information among the consumers of beer quality and a kind of non rational behavior due to the branding effect in the market. McConnell (1968) made a quite illustrative controlled experiment of this branding effect. He made 24 home deliveries of six-packs of beer over two months to a large sample of beer drinkers. All the beer was identical, so there were absolutely no quality differences. The consumers did not know this, as the regular label were removed and new labels were added with three different prices corresponding to the average price of a popular, premium and super-premium beer on the American market at that time. When assessing the quality of the beers the respondent rated the high-priced beer higher in quality than the other two beers with a

[4] Average export shares of about 4% retrieved from the Orbis database of breweries.

wide margin. One drinker even said of the brand he thought was cheap, “I could never finish a bottle”.

When breweries discovered that consumers perceived the quality of bears as high-priced brand, they began advertising their brands as premium beers. This was a real money machine. By increasing the price and branding the Budweiser as a premium beer, Anheuser-Bush increased their market share from 4% in 1950 to over 45% in 1990, see Greer (1993). The price difference between discount and premium beer is large, and production costs are about the same; advertising then becomes an important competition parameter. As expenses for branding to a large degree are fixed cost and independent of the production scale, the larger brands earned a competitive advantage in the branding game. This was a main reason for the restructuring of the industry and the emergence of national brands in the years after the Second World War when the national broadcasting took off. For a discussion of the main drivers behind the emergence of these large regional breweries see Adams (2006).

The political changes that opened the possibilities of going global may at the same time have released some advantages related to economies of scale and scope for a global competitor. While production has to be local there is still economies of scale to be reaped in management, technology and branding of a global competitor. The increase in tourist travels and information sharing between regions through the internet and broadcasting has also raised the return from a globally promoted brand. Further, the main segment of the beer market is young males, and branding often relates to sports activities. As major sports activities like world championships or the Olympic Games have become world events, the breweries can capitalize on their brand by moving into other regional markets, and this may be a reason for the large number of cross border acquisitions that took place in the last decade.

As pointed out above the main market for beers in the west has become mature and highly competitive and breweries have to look at the emerging new economies in the east for further growth. The Product Life Cycle (PLC) management thinking assumes that products pass through a number of stages, each stage calling for a specific strategy. As conditions change, so does the marketing strategy. The life cycle concept has been related to brands as well as generic products. Here we take the view of the generic product – “beer” – and relate PLC to it. In Western Europe and North America the product has without question reached the *maturity stage* which according to conventional thinking involves slow growth with more competition for market share and the competitive battlefield changes towards greater emphasis on costs and service as price competition has squeezed profit.

The mature, or maturing, industry is thus exposed to changing mobility barriers and this will probably increase rivalry. The slow growth in demand forces companies to plan and implement strategies with more care as failures may become even more costly than before. In particular cost control assumes importance, including decisions on product mix and pricing. In the mature industry price as a means of cross-subsidization may become more important. Often process-innovation becomes more important than product innovation as a key to keep costs low. Equally, vertical and horizontal integration takes increasing importance as competitive measures in a mature industry. Finally, companies that originate in competitive markets will often be tempted by internationalization into less sophisticated markets in order to exploit their superior technology, management and marketing skills.

Following the PLC theoretical considerations we can with some confidence conclude that the international beer market consists of somewhat heterogeneous countries at different levels of development. While beer functionally fulfills the same set of needs in all markets, there may be local differences in the use of the product. The West European markets are all mature with a slight decline in beer consumption, and the dominating international breweries all originate here. The Americas trail Europe, while markets in the Far East and Eastern Europe can be described as emerging growth markets. Historically, of course, beer has been well known and the Czech Republic was one of Europe´s dominating beer nations around 1900, both in production quantity, product quality and beer consumption. Soviet dominance after World War II restricted innovation and restructuring in Eastern Europe, and the post 1990 internationalization has opened these markets to the now dominating Western European breweries.

As a consequence of this globalization, beer is at various stages of the product life cycle across the markets – in the growth phase in Eastern Europe and the Far East, in maturity or even decline in North America and Western Europe. An international or global company cannot count on automatically gaining from a sweeping homogeneous strategy. It would be helpful, once more, to consult Porter (1980) in order to outline sources of competitive advantage in markets under globalization:

Comparative advantage at the factor level (cheap labor, water quality etc.)
Economies of scale in production lead to cost advantage
Economies of scale in marketing; distributing costs across labels and nations
Cross-market exchange of experience
Product differentiation, for instance a mix of local and globally advertised brands
Set up entry barriers for local potential entrants

Even if the international beer market is not global, at least it is very much on the way. The following section presents a description of the recent development focusing in particular on the performance of the leading breweries to assess where the globalization strategy has paid off.

4. Performance of the four leading breweries

Table 5 shows the results of the merger and acquisition strategy by the now four leading breweries, which were about the same size in 2000. The acquisition period has dramatically changed the situation and A-B InBev became the market leader with the combined size of SABMiller and Heineken in turnover and has grown by more than 300% over the period. Also SABMiller experienced a very fast growth, but from a lower level in 2000.

The last two columns list the size of the acquisitions made of the four breweries in the period since 1997 and relate the total bill for acquisition to the turnover in 2000. The relative amounts spent on acquisitions definitely correlate with the growth of the companies. Thus the strategy of acquisition has been a lead way to increase the market shares of the breweries. However, it has not been equally efficient across the four breweries. Comparing A-B InBev and SABMiller they hold about the same growth rate over the period but SABMiler's accumulated deal value of acquisitions are only 1/3 of A-B InBev's when measured relative to turnover in 2000. Therefore SABMiller has been more successful in organic growth compared to A-B InBev. Also Heineken has had a higher organic growth compared to Carlsberg as the accumulated acquisition rates are the same but the growth rate much higher for Heineken.

Table 5: Growth and M&A strategies of the four leading breweries

	Turnover Bill. EURO		Growth in Turnover	Acquisitions Bill. EURO	Ratio of acq. to Turnover in 2000
	2000	2009	2000 - 09	1997 – 10	
A-B Inbev	5.9	26.0	323%	56.3	9.54
SABMiller	3.4	14.7	300%	10.1	2.97
Heineken	7.0	13.6	110%	9.1	1.45
Carlsberg	4.8	8.0	67%	7.0	1.46

Source: The Orbis company database covering more than 8000 breweries worldwide.

The higher organic growth for SABMiller and Heineken could be a result of their strategic positions in regions with higher growth in beer consumption but it could just as well be a result of a more efficient production and market management. To further explore this question the next part takes a closer look at the direction of their globalization strategy.

The four leading breweries have played a major role in the restructuring of the global brewing industry but has this acquisition strategy also made a payoff to the stake holders of these companies? To highlight this question, table 6 takes a look at some of the key financial results for the four companies in the acquisitions period from 2000 to 2009. The figures are compared to the average for the very large breweries in the Orbis database – about 200 breweries worldwide and mostly regional breweries.

Measuring the profitability with the Earning Before Interest and Taxes (EBIT), A-B InBev and Heineken have a better performance than the large regional breweries, SABMiller is only marginally better and Carlsberg has a lower earning. However, concerning the return on total assets and the return on shareholder funds, SABMiller outperform the 3 other while Heineken still earns a higher return than the very large breweries on average.

Table 6: Performance of the four leading breweries, 2000 to 2009

	EBIT margin	Return Total Assets	Return on shareholder funds	Total Assets per employee
A-B InBev	19.3	6.9	17.4	367
SABMiller	12.9	11.6	32.8	203
Heineken	17.4	9.4	19.7	284
Carlsberg	10.7	5.1	19.4	269
Very large breweries*	12.6	7.6	18.5	272

Notes: * The largest 200 breweries excluding the 4 largest in 2009
Source: The Orbis company database covering more than 8000 breweries worldwide.

The fact that the company which has the highest growth through acquisitions, A-B InBev, also present a low return on the assets pose some questions to the acquisition strategy. An acquisition strategy may be a fast but expensive road to growth. If the market shares are bought at a high price, the strategy will put a lot of goodwill on their books and thereby reduce the return on assets and the return on the shareholder funds. The last column of table 7 verifies that this could be the case for A-B InBev as its book value of asset per employee is rather high. One interpretation of the low return is, that the local share holder has reaped most of the benefit from the synergies emerging from the acquisitions only leaving a normal return to the acquirer. An alternative interpretation could bee, that it may take some time to reap the benefit of the globalization strategy and it would pay off in the future.

These results for the brewery industry are in line with the general empirical evidence of the performance of acquiring firms post the acquisitions. In a large event study of more than 937 acquisitions of listed firms in the US Agrawal et al. (1992) found that the acquiring firms on average suffer a wealth loss of about 10% when correcting for firm size bias. Roler et al. (2001) make a survey of a large number of studies and find an average gains for the acquired firm of 30% whereas the acquiring firms on average just break even. This verifies that the owners of the acquired firms on average worked away with most or all the net benefit from the merger.

Beside cost savings a mergers may also increase the market prices through the reduction in the number of competitors and a number of studies have examined this market power hypothesis. Gugler et al (2003) find some evidence by studying 15,000 mergers worldwide from 1981 to 99 where half of the cases experience rising profits and falling sales consistent with the market power hypothesis. However, Weinberg (2007) make a survey of 9 studies testing for pre- and post-merger prices and find that only a minority of mergers resulted in higher prices.

Mergers can also be a result of failing firms where it is a preferred alternative to a bankruptcy process which involve large legal costs. Tremblay et al (1988) studied the performance of acquiring and acquired breweries in the US from 1950 to 84 and find the growth rate to be significant lower in the acquired breweries. Greer (1993) further found that the acquiring breweries in the US have not performed very well as they have lose market shares to Anheuser-Busch which has been growing only by organic growth. The failing market hypothesis seems therefore to explain the restructuring of the national brewing industries right after the world war.

5. The future market prospect for the leading breweries

According to the position of a market on the Product Life Cycle, a distinction can be made between mature markets and emerging markets. The former are close to the top of the PLC – sometimes on the declining part of it, while emerging markets experience growth. Mature markets typically consume beer of a higher quality (and margin), while emerging markets are characterized by growth in volume and in the longer run by increasing product value. The distinction is not entirely clear, and some markets have segments of both kinds (Brazil may be a case in point). Table 7 gives an impression of major markets of both kinds, and contributes to our understanding of the leading groups' fight for global reach.

The table compares the seven leading markets in each category. Among the top-four national markets, three belong to the emerging ones which illustrates the importance of the "new" markets. Just the Chinese market is now five times larger than the German market and close to the double size of the American. Further, expected volume growth in the seven emerging markets over the next 5 years approaches the size of the American market in 2009, while consumption in mature markets is expected to decrease slightly. Part of the Product Life Cycle for beer is explained by substitution to other alcoholic drinks. Spirits like vodka and gin are quite cheap to produce and are substituted by beer when the income per. capita begin to growth in emerging markets and in the matured markets beer is substituted by vine with decreasing beer consumption.

The figures for the growth potential in the bier market in table 7 illustrate how important it is that the breweries have chosen the right direction in their globalization strategy. Taking a look at the leading breweries' exposition to the emerging market, it seems that SABMiller and Carlsberg have the best strategic positions. As the smallest of the large four groups, Carlsberg has a large part of its revenue from Eastern Europe and Asia. Also SABMiller has a large share of its revenue from emerging market in Asia, Africa and Latin America, and this position in the emerging market could explain comparable higher organic growth in the period since 2000. In contrast, A-B InBev now has its main revenue source from the American market while Heineken has a wide global coverage not focused on emerging markets.

Table 7: Market volume and growth potential in selected markets.

Country	2009 mill. liters	Growth 2009-2014 mill. liters	Beer consumption liters per capita 2009
Mature markets		**(150)**	
USA	25,200	350	82.0
Germany	8,800	(200)	107.2
Japan	7,000	(200)	55.2
U.K.	5,000	(300)	81.6
Canada	2,400	200	72.4
Australia	1,900	200	86.9
France	1,900	(200)	30.2
Emerging markets		**22,400**	
China	43,000	18,200	32.3
Brazil	11,700	1,500	59.4
Russia	10,900	400	77.6
Mexico	6,500	700	59.5
Ukraine	2,400	(200)	52.4
Vietnam	1,600	700	18.5
India	1,500	1,100	1.3

Notes: Figures have been rounded off
Source: Euromonitor International (2010).

Concerning further consolidation in the industry the sheer size of the largest brewery groups, in combination with legal barriers to M&A activity, makes further jumbo take-over fairly unlikely. Filling the geography gaps, then, may be obtained by alternative avenues. FEMSA was a slow growing Mexico based brewery covering Latin America (particularly Mexico and Brazil) and with a recognizable export to the USA. After having negotiated with Kirin, SABMiller and Heineken, a deal with the latter was announced in early 2010. The beer unit of FEMSA was acquired towards a 20% equity stake in the Dutch family company that allowed the family to just keep control of the firm. Thus Heineken managed to cover one of its important geographical holes and offset, in part, the adverse tendency in its traditional European main markets. A final strategic advantage for Heineken has been that other major brewery groups without a foothold in Latin America now find it much more difficult to penetrate Middle and South America by a single take-over.

By volume and the expected future growth prospects, it is no wonder that China has been at the center point in much strategic planning. The vast market is dominated by local players, but a number of the leading local breweries have foreign ownership shares, for instance China Resources (SABMiller 49%), Tsingtao (Asahi 20%), Zhuijang (A-B InBev 25%), Chongqing (Carlsberg 30%) and Kingway (Heineken 21%). Foreign *brands* such as A-B InBev´s and Carlsberg´s account for 14.2% of the volume, while joint-ventures and ownership shares account for roughly 15% of the market. There seems to be space for expansion, but local breweries are very quick in tapping technology from partners, and Chinese business policy can be quite tricky. Increased market share can be costly to buy. A-B InBev already holds a market share above 10% on this market and SABMiller have close to 20% through its 49% stake in China Resources and it is unlikely that these two players would be allowed to take further acquisitions in China. This leaves Heineken and Carlsberg with the best growth prospects for this important market.

Another way to examine where some potential synergies may still exist in the brewing industry which could be reaped by further acquisitions and restructuring of the industry is to look at effects from economies of scale and scope. The fast development in information and communication technologies in recent years has probably induced scale and scope effects in production, distribution and administration. The centralization of information makes further automation possible in production planning, logistics, electronic ordering and payments and enhances the quality of the information available for the managers' decision at all levels. Also the development in broadcasting and branding over the internet may contribute to increasing economies of scale and scope in marketing.

To examine where larger breweries are more efficient the following models has been estimated where a beta coefficient larger than zero proves that larger breweries are more efficient:

$$Performance_t = \alpha + \beta Size_t + \gamma X_t + u_t \qquad (1)$$

The size of the breweries is measured by the number of employees and four different measure of performance has been used in the estimation. X is a vector of other control variables and u is the normal error term.

The database used in the estimation is Orbis which holds information on more than 8000 breweries worldwide and facilitates a study of their efficiency. However, a large part of the breweries are fairly small and information is also missing for key variables for a large number of the smaller firms. Therefore a sample of 347 breweries are used, excluding breweries with less than 50 employees and an EBIT below or equal to zero or greater than 50%. Table 8 shows some estimates of the scale elasticity from four models where all variables are in a log transformation so the estimated coefficients are elasticities.

The first model estimates the labour productivity measured with the turnover per employee and the estimated size elasticity of 0.122 is positive and significant. This implies that breweries with

100% more employees also have a 12.2% higher labour productivity on average. This indicates that there may still be scope for some restructuring in the industry where smaller breweries can reap economies of scale through a merger strategy and to the benefit of their owners.

Table 8: Estimates of the scale elasticity in 2008

	Turnover per employee (log)	EBIT margin (log)	Return on total assets (log)	Return on shareholder funds (log)
Intercept	3.607* (0.484)	0.532 (0.346)	-1.235* (0.471)	3.126* (0.471)
Employee (log)	**0.122*** (0.071)	**0.117*** (0.032)	**0.039** (0.043)	**0.050** (0.043)
Solvency (log)		0.218* (0.076)	0.725* (0.103)	-0.227* (0.103)
R-square	0.015	0.054	0.123	0.012
Observations	347	347	347	347

Notes: * Significant at least at the 5% level. All coefficients are OLS estimates
Source: The Orbis company database covering more than 8000 breweries worldwide.

However, part of the higher turnover per employee could be a result of more capital equipment used per employee in the larger breweries, which besides increasing the turnover per employee also increases the costs per employee[5]. The last three models therefore look at the financial results and introduce solvency as a control variable. The estimated scale elasticity is positive for all three financial performance measures but only significant for the EBIT. As EBIT is earning before interest expenses, it does not include the costs of capital either, and as a result of capital deepening would blow up too. This is probably what happened, as the return on total assets and the return on shareholder funds has a much lower scale elasticity and therefore not significantly different from zero. The control variables are significant in all the financial models and turned out with the right sign. Higher solvency has a large effect on the return on total assets, as it reduces the expenses for interests on debts. The significantly higher return on shareholder funds in companies with low solvency is a compensation for the higher risk of bankruptcy associated.

Even if only small scale advantages to the owner of the breweries exist, there may still be some advantage in the market through a merger and acquisition strategy as it will reduce the number of

[5] Orbis does not hold information on capital used in the breweries. However, technology used and capital intensity may vary across countries, but an estimation with fixed effects for countries do not change the estimated scale parameter significantly, except for the turnover per employed which fall and turn insignificant, due to a significant lover productivity in China and Russia which hold a lot of the smaller breweries..

competitors and thereby increase market power. However, the higher degree of collusion and prices of beers on the market will also be to the benefit of breweries not participating in merger activities, and this is mainly the smaller breweries. The market power story could therefore explain that the smaller breweries do not have a significantly lower return on their total assets and shareholder funds compared to the large brewery as they also enjoy the benefit of higher market concentration through a higher price cost margins.

6. Conclusions and discussion

On the basis of recent developments in the international brewing industry, an analysis of the leading brewing groups' M&A behavior is carried out in the light of the strategic framework of Michael Porter and his theoretical basis: the Structure-Conduct-Performance paradigm. Some conclusions are self-evident.

First, the opening of the global market due to political and economic liberalization has initiated a positioning race between the top breweries. Competitors have weighted organic growth and M&A differently, but it is still too early to draw firm conclusions on the merits of the two growth strategies.

Performance measures do not indicate that the four top brewers have done significantly better than a control group of 200 "large breweries". This finding can be interpreted as an indication that scale advantages are emptied at much smaller capacities than those commanded by the top breweries. Still, figures of increasing concentration at least indicate that first movers in the industry gained advantages by spotting and exploiting new business opportunities in the two decades of globalization. Considering the relative performance of the second and third tier of breweries, it is far from certain that the concentration drive will continue.

Second, the study shows that by and large the generalizations that were spelled out in Michael Porter (1980) have stood up well three decades after they were formulated, on the eve of globalization.

Third, since the positioning school can easily be interpreted as a corporate strategy version of the micro economics based Structure→Conduct→Performance (SCP) paradigm, the international beer production sheds some light on this dominating theory in the field of industrial economics.

Did industry structure determine company conduct, and in turn company performance? Or was it rather the other way around, as argued by the Chicago school of Industrial economics? In answering this crucial question, the starting point must be beyond structure, as the attention should be at the radically and swiftly changing (business) environment, i. e. the forces of globalization and liberalization of the past 20 years.

On the eve of globalization, around 1990, the industry was fragmented in predominantly national markets. Political and economic changes opened up for a *global structure*, and the first and fast movers reaped the gains of globalization. Conduct – i. e. strategic behavior – impacted Structure as well as Performance: C→(S, P). Performance in terms of (global) market share dominated performance in financial terms. Once the new structure was shaped, the M&A train rolled on accompanied by some joint venture activity, but also by varying degrees of organic growth.

The analysis offers only limited support for the SCP paradigm. Opportunities triggered conduct which soon radically impacted the structure of the brewing industry. In fact, the reactions of the leading brewing groups give some support to the Chicago school´s inverse causality from conduct to structure. The Harvard strategy approach - based on SCP but taking the company as analytical unit – fares better in explaining the processes of restructuring; this only underscores that the strategy based version is theoretically and causally less rigid than its theoretical foundations and can more easily be applied to complex cases.

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