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Causes of Fiscal Illusion: Lack of Information or Lack of Attention?

Abstract

According to fiscal illusion theory, voters misperceive fiscal parameters because of incomplete information. The costs of public services are underestimated, implying that if voters had full information, their support for public services would drop. The literature has focused on testing the implications of fiscal illusions, whereas the question why fiscal illusions occur at all has received less attention. According to the standard argument, individuals base their opinion of policy proposals on a valuation of benefits and costs. We formalize the standard argument and show that it is a special case of the attention model of fiscal illusion. In this model, opinion depends on the saliency of attributes of the proposal. We show that the attention model can better explain fiscal illusion by deriving competing hypotheses, which are tested in a survey experiment. We conclude that the mechanism behind fiscal illusion is attention and framing, not incomplete information.

INTRODUCTION

The notion that voters may suffer from fiscal illusion has attracted considerable scholarly attention. It has been debated for almost 200 years, and over the last 30-40 years it has been subject to intensive empirical scrutiny. The notion suggests that voters systematically misperceive fiscal parameters and therefore make biased fiscal choices. However, our understanding of the exact mechanism that leads to fiscal illusion is limited because the literature has overwhelmingly focused on the empirical investigation of the *implications* of fiscal illusion (Oates 1988; Dollery and Worthington 1996). This has been to the detriment of the theoretical development of the idea. So the questions remain: What exactly is the *mechanism* behind fiscal illusion? Why do fiscal illusions occur?

The fiscal illusion literature assumes, although sometimes tacitly so, that the mechanism at play is incomplete information. Because of lack of transparency in the fiscal system, so the argument goes, the true price for public programs is obscured for citizens. If they were correctly informed, they would be less inclined to support public programs. However, how this information mechanism exactly works has never been developed theoretically. As noted by Oates (1988, 79), “the fiscal-illusion literature has identified a number of instances of potential illusion, but it has not explored with much care or rigour their conceptual underpinnings”.

In this paper we present a new theoretical argument on the mechanism behind fiscal illusion. Our starting point is the traditional idea that fiscal illusion can be explained by incomplete information. We formalize this argument, and show that it is a special case of what we call the attention model of fiscal illusion. This model builds upon the idea that fiscal illusions

are caused by lack of attention rather than just lack of information. We make this argument by applying insights from the framing literature that studies how voters' attitudes can be influenced by the framing of issues (for a review, see Chong and Druckman 2007). Our argument is that fiscal systems to varying extents make citizens pay attention to the true price of public programs. We derive four hypotheses. The three of the hypotheses build upon information asymmetry and follow from the standard argument. They are – as the standard argument is a special case - also compatible with the attention model, but not necessary implications of this model. The fourth hypothesis builds upon framing effects. It follows from the attention model, but not from the standard argument.

We then proceed to perform a plausibility test of the attention model. To avoid methodological pitfalls facing studies based on observational data, we turn to experimental methods. We have conducted surveys among 2,980 Danish citizens and subjected the respondents to randomized treatments that measure both information and attention effects in their attitudes towards public spending. We find limited support for the first three hypotheses, but strong support for the fourth hypothesis. We take this as support for the attention model of fiscal illusion.

The paper is structured in the following way. First, we present the theory of fiscal illusion and discuss its strong and weak points. Second, we develop the formal model. Third, we turn to the empirical test and explain the experimental design and data. Fourth, we report the findings from the analysis. In the final section, we conclude and discuss to what extent attention effects may be the mechanism driving the various types of fiscal illusion discussed in the literature.

FISCAL ILLUSION

The concept of fiscal illusion refers to a systematic misperception of the costs and benefits of public programs. Its historical roots date back to the 19th century where several of the basic ideas were developed by John Stuart Mill and John Ramsay McCulloch (Sausgruber and Tyran 2005; Dollery and Worthington 1996). But perhaps the most thorough treatment of the issue was given by the Italian Amilcare Puviani, who published his major works around the end of the 19th century (Buchanan 1967, 126-143).

Fiscal illusion is more than imperfect information or fiscal ignorance. While imperfect information may cause random under- and overestimation of the costs of public programs, fiscal illusion refers to a systematic misperception – a recurring propensity to underestimate the true tax burden. Underestimation of tax burdens is a consequence of the construction of the tax system, which may obscure the incidence and extent of taxation. In modern tax systems, five more specific system characteristics have been identified as potential causes of fiscal illusions. We discuss these below. Here we want to emphasize the main point of the fiscal illusion literature: If voters systematically under-perceive their tax costs, it will lead to bias in budgetary decisions. Fiscal illusion means that voters are induced to support an excessive public sector because their underestimation of tax-prices leads to an over-supply of public programs (Oates 1988; Dollery and Worthington 1996).

In more formal terms, the size of the public sector in a world where voters suffer from fiscal illusion can be estimated by the following equation (Oates 1988, 68):

$$E = \alpha X + \beta F + u$$

where E is a measure of the public budget, X is a vector of explanatory variables in a world without fiscal illusion, F is a vector of variables designed to measure fiscal illusion, and u is the disturbance term.

The effects of fiscal illusion according to this model can be illustrated by the simple diagram in Figure 1, which is developed by Wagner (1976, cf. also Dollery and Worthington 1996). In Figure 1, P_2 represents the true tax price of a public good. The desired quantity would be X_2 , which would imply a budget of OP_2aX_2 . This budget would be consistent with the explanatory vector αX in the equation above. In a world with fiscal illusion, the perceived tax price falls to P_1 , which would yield a desired rate of public output of X_1 and a perceived budget of OP_1cX_1 . However, the true budget is OP_2dX_1 . The excessive size of the budget thus corresponds to the area X_2adX_1 . This area would be consistent with the fiscal illusion vector βF in the equation above.

<Figure 1>

A large number of studies have investigated the fiscal illusion hypothesis. They have had an empirical nature and followed a particular approach – the “general approach” according to Oates (1988, 68) – namely to investigate the implications of fiscal illusion for the size of the public budget. Seen in relation to Figure 1, the ambition of these studies has been to measure the size of the area X_2adX_1 . Seen in relation to the equation above, the ambition has been to identify the fiscal illusion vector.

This vector has been measured in various ways based on a number of pioneering studies in the 1970s. First, complex revenue structures may create illusionary effects, so the public

budget may be larger than in systems with simple revenue structures, the so-called revenue complexity hypothesis (Wagner 1976). Second, revenue systems characterized by a high degree of income elasticity will also create illusionary effects because they generate increasing revenue without raising tax rates, the so-called revenue elasticity hypothesis (Oates 1975). Third, an increase in grants-in-aid may increase a jurisdiction's budget more than an equivalent increase in private income because citizens do not correctly perceive the lump-sum nature of the grant, the so-called flypaper effect (Courant, Gramlich and Rubinfeld 1979). Fourth, renters may underestimate their true tax burden since property taxes are not directly levied on them, so jurisdictions with many renters may have too large budgets, the so-called renter illusion hypothesis (Bergstrom and Goodman 1973). Finally, citizens may be more aware of the true costs of public programs if they are paid for through current taxation rather than public-sector borrowing. Debt financing may therefore lead to an excessive public budget, the so-called debt illusion hypothesis (Floyd and Hynes 1978). Common to these studies is the assumption that fiscal illusions are caused by incomplete information about important fiscal parameters. In all cases, the lack of information leads to excessive public budgets because the lack of information makes citizens either underestimate costs or overestimate income. In other words, the theory of fiscal illusion appears to suggest that certain pieces of information are missing since a random lack of information would not necessarily lead to an underestimation of costs or an overestimation of income.

The later literature has followed in the footsteps of these early contributions and explored with increasingly sophisticated techniques how the various types of fiscal illusions lead to excessive public budgets. We refer the reader to the excellent reviews of the early literature by

Oates (1988) and Dollery and Worthington (1996). A brief review of post-millennium studies is provided by Dell'Anno and Mourao (2012).

The empirical focus on the implications of fiscal illusion has shown that there is, indeed, often a statistical relationship between indicators of fiscal illusion and measures of the size of government budgets. Studies focused on the direct effect of information about the costs of public programs on citizens' attitudes also often find that information has a negative influence on spending preferences (Arrington and Jordan 1982; Robbins, Simonsen and Feldman 2004; Simonsen and Robbins 2000). While these empirical insights are important, the literature's empirical focus has had a price in terms of incomplete theoretical clarification and development. The literature *assumes* that citizens living under particular fiscal structures suffer from fiscal illusion because of incomplete information and then derive hypotheses from this assumption. The exact mechanism that leads citizens to misperceive the costs of public programs remains theoretically underspecified. Survey-based research even raises doubt about whether citizens systematically misperceive fiscal parameters at all (May 1982; Sørensen 1992; Blom-Hansen 2005; Welch 1985), which questions the microfoundation of the fiscal illusion theory. As noted by Oates (1988, 79) 25 years ago, the fiscal illusion literature has neglected to explore the conceptual underpinnings of the idea.

Another characteristic of the literature is that while studies, as noted, have often found a statistical relationship between indicators of fiscal illusion and measures of the size of government budgets, empirical results are at the same time rather mixed (Dollery and Worthington 1996). There are two main reasons why this is so, both having to do with the fact that the empirical evidence is overwhelmingly based on non-experimental studies. First, many studies do not account for a two-way causal relationship between the independent and the

dependent variable. For instance, the revenue complexity hypothesis states that the more complex the revenue system, the larger the public budget. However, as argued by Oates (1988, 71; see also Hendrick 2002), the revenue system may be an endogenous variable because jurisdictions with relatively high levels of spending may prefer diversified revenue systems. A similar critique applies to the income elasticity hypothesis because jurisdictions with high spending may opt for more elastic revenue systems (Oates 1988: 75).

Second, the proxies of fiscal illusions used in empirical analyses are often imprecise measures that offer only an indirect test of fiscal illusions and consequently do not rule out alternative explanations of the empirical findings. To exemplify, consider the renter illusion argument, which has led to a number of empirical studies examining and indeed also finding that jurisdictions with a large fraction of renters tend to spend more per capita on local public services and experience higher tax rates as well (Blom-Hansen 2005). This finding has sometimes been interpreted as evidence of fiscal illusions. However, as noted by Martinez-Vazquez (1983), it is also compatible with an alternative hypothesis according to which rational renters support higher public spending because they face lower taxes than homeowners. In a similar way, alternative explanations consistent with the patterns found in empirical studies have been suggested for other forms of fiscal illusions. The finding that jurisdictions with high income elasticities experience higher spending may be explained by the fact that the political costs of modifying the tax system may exceed the benefits, entailing that costs may impede tax rate increases, while increases would occur automatically in a more elastic revenue system (Wagner 1971; Oates 1988, 75). Likewise, the finding that increases in intergovernmental lump-sum grants increase public expenditures more than equivalent increases in private income – the

flypaper effect – may be explained by mechanisms other than fiscal illusion, for example, the way local budget processes are organized (Oates 1988, 78).

An important implication follows from this discussion. Even in the studies where the findings are in accordance with what would be expected from a fiscal illusion perspective, we cannot distinguish between the traditional explanation that fiscal illusion is caused by incomplete information and alternative explanations. Since the findings are consistent with other explanations, we cannot be sure that they are generated by systematic misperceptions as suggested by the fiscal illusion literature. It is, however, worth noting that the literature does not offer one single alternative explanation that applies to all five forms of fiscal illusions discussed above. Instead, a number of ad hoc explanations are suggested.

In the next section, we develop a new model of fiscal illusion. We first formalize the standard argument, which is based on the traditional idea that fiscal illusion is caused by incomplete information. The new model, which we call the attention model of fiscal illusion, is based on the idea that preferences also depend on attention. In contrast to the alternative ad hoc explanations mentioned above, this constitutes a general alternative explanation of fiscal illusions. We then present an experimental design that allows us to perform a plausibility test of the model.

CAUSES OF FISCAL ILLUSION: LACK OF INFORMATION OR LACK OF ATTENTION?

The standard argument is based on the idea that individuals base their opinion of a policy proposal on a valuation of benefits and costs associated with the proposal. According to this argument, fiscal illusions can be explained by a systematic underestimation of policy costs due to a lack of information. We base the attention model of fiscal illusion on the idea that opinion on policy proposals depends on the saliency of attributes of the proposal. In this perspective, fiscal illusion can be explained by lack of attention to, not necessarily systematic underestimation of, the costs of the policy proposal. As we shall see, the standard argument is a special case of the attention model, and both predict that citizens will typically favor policy proposals that exceed their willingness to pay. However, it is also possible to derive a hypothesis from the attention model that does not follow from the standard argument.

We first formalize the standard argument on fiscal illusion. If fiscal illusions are caused by systematic underestimation by citizens of the real costs of policy proposals, providing information of the real costs should decrease support for the proposal. Intuitively, this is easy to see. According to the conventional economic understanding of decision making and opinion formation, an individual will favor a proposal (or buy something or take some specific action) if the benefit of doing so is greater than the costs. If costs are systematically underestimated because of a lack of information, more people will favor the proposal. If the real (and higher) cost is revealed, fewer will do so.

Formally¹, let $C \sim N(\mu_C, \sigma_C^2)$ denote the costs of a policy proposal, as perceived by an individual, measured in, for example, DKK (Danish currency).² Similarly, we denote the perceived benefits B: $B \sim N(\mu_B; \sigma_B^2)$. We assume that B and C are positive, stochastic and independent variables. We expect the individual to favor the proposal only if:

$$B > C \Leftrightarrow B - C > 0 \Leftrightarrow \frac{B}{C} > 1. \quad (1)$$

Given these assumptions, and since $(B - C) \sim N(\mu_B - \mu_C; \sigma_B^2 + \sigma_C^2)$, it is easy to find the share of individuals favoring the proposal, since:

$$P(B - C > 0) = 1 - \Phi\left(-\frac{\mu_B - \mu_C}{\sqrt{\sigma_B^2 + \sigma_C^2}}\right) \quad (2)$$

For instance, if the mean evaluation is that the benefit of the proposal is $\mu_B = DKK\ 1,100$, and the mean evaluation of the costs is $\mu_C = DKK\ 1,000$ (and $\sigma_B = \sigma_C = 400$), then $P(B - C > 0) = 1 -$

$$\Phi\left(-\frac{100}{\sqrt{400^2 + 400^2}}\right) = 0.57, \text{ corresponding to a share of 57 per cent favoring the proposal.}$$

Now, if costs are systematically underestimated, μ_C is lower than the real costs. If an individual is informed about the costs, C is no longer a stochastic variable but a constant, C^* . An individual will favor the proposal only if $B - C^* > 0$, and since $(B - C^*) \sim N(\mu_B - C^*; \sigma_B^2)$, the probability is given by:

$$P(B - C^* > 0) = 1 - \Phi\left(-\frac{\mu_B - C^*}{\sqrt{\sigma_B^2}}\right). \quad (3)$$

¹ The authors would like to thank Professor Jens Ledet Jensen, Department of Mathematical Sciences, Aarhus University, for helping the authors with the formal proofs.

² Since the experiment is conducted in Denmark in the Danish currency, it is practical to use this also in the presentation of the model.

Hence, we should expect fewer to favor the proposal, as long as $C^* > \mu_C$. For example, if a true price of $C^* = 1,600$ is announced, $P(B - 1600 > 0) = 1 - \Phi\left(-\frac{1100-1600}{\sqrt{400^2}}\right) = 0.106$, corresponding to support from 10.6 per cent. If an even higher price is announced, the support will of course decrease further. For instance, if $C^* = 2,000$, only 1.2 per cent will favor the proposal.

Hence, from this formalization of the standard argument, we can derive three hypotheses. First, if individuals systematically underestimate the costs of a proposal ($\mu_C < C^*$), announcing the real price will lead to a drop in support of the proposal:

H₁: Announcing a realistic price of a policy proposal *decreases* support for the proposal.

Second, since we expect individuals to favor the proposal only if the perceived benefits exceed the costs, announcing higher costs will also lead to a drop in support:

H₂: When the announced price of a policy proposal increases, support for the proposal *decreases*.

It also follows from the model that when an exact price is announced, individuals can determine with greater certainty whether they support the proposal or not. If the price is unknown, the share of individuals favoring the proposal depends on the uncertainty of the perceived benefits and the uncertainty of the (under)estimated costs. When the costs are announced, the share of individuals favoring the proposal only depends on the uncertainty of the perceived benefits. Formally, as we saw above, if the price is not announced, the variance of $B - C$ is $\sigma_B^2 + \sigma_C^2$. If the price is announced, the variance is σ_B^2 . Since $\sigma_C^2 \geq 0$, the variance of the difference between benefits and must fall when costs are announced. Hence:

H₃: Announcing an exact price of a policy proposal *decreases* the variance of the support for the proposal.

We now turn to the attention model of fiscal illusion.³ Several empirical studies in public opinion research have shown that the framing of a policy issue is decisive for how it is evaluated by voters. The attitude of a voter on a policy issue depends on several attributes of the issue. For instance, the attitude towards military intervention abroad is a function of the attitude, among many other things, to whether the intervention is seen as just or unjust, to whether the intervention is perceived to be beneficial to the country or not, to the economic costs of the intervention, and to the costs in terms of casualties. However, according to framing theory, the attitude is also a function of the salience of these attributes. If the voter focuses on the fairness of the intervention but ignores the costs and casualties when forming the attitude, she is likely to favor the intervention. If she focuses on the casualties but ignores the fairness, she is more likely to be against. The salience of attributes depends on how the political issue is framed. This means that the same voter can be swayed to be for or against the same policy issue, depending on the framing. Chong and Druckman (2007, 105) formalize the argument in the following simple model:

$$Attitude = \sum v_i \times w_i$$

where v_i is “the evaluation of the object on attribute i , and w_i is the salience weight ($\sum w_i = 1$) associated with that attribute”. Hence, the attitude of a voter depends on the evaluation of different attributes of an object and on how much this attribute is weighted. The valuation, of course, mirrors the costs and benefits in the standard argument discussed above. However, voters

³ This section draws heavily, sometimes verbatim, on Blom-Hansen, Baekgaard and Serritzlew (2015).

do not necessarily always consider all relevant attributes. If an individual does not consider or overlooks an attribute j , w_j is zero, and the attribute does not affect the attitude towards the object even though the individual may have strong feelings on j (v_j is large). In other words, if citizens understand the costs of public programs, but do not pay attention to them, then simply alerting them of the costs may change their attitudes. We refer to such an alert as a cost frame.

The public opinion literature has shown that framing effects can be substantial. For example, Nelson et al. (1997) study the tolerance for the Ku Klux Klan (KKK). The attitude towards a KKK rally can depend on several attributes. Two of the important ones are the right to free speech (which should lead many to believe that a KKK rally would be acceptable) and the risk of public disorder (which should lead many to be critical of a KKK rally). Nelson et al. show that tolerance for the KKK depends on how the rally is presented. In an experimental design, some subjects were randomly assigned to a group that was shown a news story on the rally with a focus on free speech, while subjects in the other group were shown a news story with a focus on public order. As expected, subjects in the first group expressed more tolerance for KKK rallies. In other words, attitudes of subjects depend on how the news story is presented. Chong and Druckman (2007, 110) conclude in their review of the literature that framing effects have been found for many different types of issues (from government spending to affirmative action) and in different research designs (in addition to experiments, also in surveys and case studies). Hence, we know with great certainty that framing has quite large immediate effects on preferences.

Just as in the standard argument presented above, the attention model of fiscal illusion predicts that citizens, when little attention is paid to the cost attribute, will tend to accept policy proposals that exceed their willingness to pay. However, a formal analysis leads to a hypothesis

in direct contrast to the standard model. Using the same notation as above, we assume that a policy proposal has two attributes. The first attribute is the perceived costs of the proposal, C , and we assume $C \sim N(\mu_C, \sigma_C^2)$ with a saliency weight w . The second attribute is the perceived benefits. As above, we call this attribute B , and we assume that $B \sim N(\mu_B; \sigma_B^2)$. We denote the saliency weight of this attribute $(1-w)$. According to framing theory, the attitude is the sum of the product of evaluation and saliency weights of the attributes. If the attitude is positive, an individual will support the proposal. If it is negative, he will oppose it. So, we expect support only if:

$$(1 - w)B > wC \Leftrightarrow \frac{(1-w)B}{wC} > 1 \Leftrightarrow \frac{B}{C} > \frac{w}{1-w}. \quad (4)$$

The probability of support is given by:

$$P((1 - w)B - wC > 0) = 1 - \Phi\left(-\frac{(1-w)\mu_B - w\mu_C}{\sqrt{(1-w)^2\sigma_B^2 + w^2\sigma_C^2}}\right). \quad (5)$$

Note that this model is still consistent with the three hypotheses derived from the standard argument. If individuals tend to underestimate C , announcing a realistic price will decrease support (provided that $w > 0$). If the announced price increases, support should decrease (provided that w is constant and ≥ 0). This is of course a reflection of the fact that the standard argument is a special case of the attention model.⁴ Note, however, also that H_1 - H_3 have a different status in the standard argument and the attention model. While the predictions of these hypotheses are the only possible outcomes according to the standard argument, other outcomes are possible as well according to the attention model. Evidence in favor of H_1 - H_3 is therefore an

⁴ Note that the attention model does not offer a clear prediction of the effects on the variance in support (corresponding to H_3). If $w \neq 1-w$, any hypotheses would have to rest on assumptions on the relative size of the variance of B and C .

indication that incomplete information is, as the standard argument implies, crucial to understanding fiscal illusion. On the other hand, if these hypotheses are rejected, this would be evidence against the standard argument but not against the attention model.

Consider the same numerical example as above.⁵ If the salience of the attributes is equal ($w=0.5$), the attention model of fiscal illusion leads to a prediction identical to the standard argument: support from 57 per cent.⁶ If, however, individuals fail to consider the cost attribute, the support increases. In this case, $w = 0$, and:

$$P((1 - w)B - wC > 0) = 1 - \Phi\left(-\frac{1 \times 1100 - 0 \times 1000}{\sqrt{1^2 400^2 + 0^2 400^2}}\right) = 0.997, \text{ corresponding to support from 99.7 per cent.}$$

Generally, when the saliency of the cost attribute, w , drops, the support increases. The formal proof appears in the appendix. Since we know from the empirical literature on framing effects in opinion formation that saliency weights depend directly on how policy proposals are framed, we expect that using a cost frame will decrease support. This makes little sense according to the standard argument. If fiscal illusion is due to imperfect information about fiscal parameters, , such as the price of a proposal, simply mentioning the word “price” should not affect an individual’s evaluation of the proposal. According to the standard argument a change in the evaluation will only take place if the individual is actually presented with new information. If, however, support is also a function of the saliency weights, and if saliency weights can be affected by framing, this is a natural consequence. From the attention model we therefore predict as follows:

⁵ $\mu_B = DKK 1,100, \mu_C = DKK 1,000, \sigma_B = \sigma_C = 400$.

⁶ In other words, the standard argument is a special case of the attention model where saliency weights are of equal size and constant.

H₄: Using a cost frame when presenting a policy proposal decreases support for the proposal.

Evidence in favor of H₄ is an indication that framing effects is, as implied by the attention model but not by the standard argument, crucial to understanding fiscal illusion.

Note that the attention model of fiscal illusion, just as the standard argument, provides a general explanation of different types of fiscal illusions. A few examples including well-known types of fiscal illusions may clarify this point. For instance, renter illusions may occur because renters are less attentive to property taxes than are home owners. Using the attention model of fiscal illusions, this may be explained by renters' attention not being drawn to the size of property taxes because they are not presented with property tax bills like home owners. Likewise, intergovernmental lump-sum grants may create larger increases in public expenditures than increases of similar sizes in private incomes because increases in lump-sum grants are associated with attention solely on how the extra money could be spent, whereas increases in private income are also associated with how much should be used.

Summing up, the predictions of H₁-H₃ follow directly from the standard argument. They are also consistent with the attention model but not necessary implications of this model. Finally, the prediction of H₄ follows from the attention model but not the standard argument.

DESIGN: TWO SURVEY EXPERIMENTS

To perform a plausibility test, we do two things: (1) We test the three hypothesis (H₁-H₃) derived from the standard argument as well as the attention model. This requires variation in the exact

costs that citizens are confronted with. (2) We test H₄, which follows only from the attention model. This requires variation in whether or not the costs of a policy proposal are mentioned at all.

This variation is difficult to find in observational data. First, variations in the framing of policy proposals are likely to depend on the decision makers' anticipation of the citizens' preferences. This involves a problem of simultaneity. Second, variations in cost framings and the exact costs of a policy proposal are likely to be associated with other important, typically unobserved, variables (such as the nature of the policy proposal). This involves an omitted variable problem. Both problems create endogeneity, which implies that empirical correlations cannot be interpreted as causal effects.

This problem is well known in the framing literature on opinion formation. The standard solution is survey experiments, where variation in framing and information is randomized. Because of the randomization, the experimental approach ensures that the independent variables are completely exogenous. Hence, we test the hypotheses in a survey experiment in which respondents are asked to state their support for a policy proposal. Five treatments vary cost frames and the exact costs of the proposal.

We randomly divided the respondents into five groups, which were then asked a simple question in different versions. In the first version, the costs of the policy proposal are not mentioned at all. In the second version, we mention the word "costs" but without providing any specific information. Hence, by comparing treatments I and II, we have variation in whether the policy proposal comes with a cost frame or not.

In the remaining three treatments, we mentioned three different exact costs: A low, a medium, and a high cost for the exact same policy proposal. By comparing these treatments, we have variation in the exact cost amounts.

Respondents in treatment group I were asked to state their opinion on a hypothetical policy proposal: “Imagine that a proposal is made that senior citizens serviced by the municipal elderly care is offered an extra bath each week. To what extent do you agree or disagree with this proposal?” The respondents could (as in all treatments) choose between six different responses to the proposal: “fully agree”, “partly agree”, “neither agree nor disagree”, “partly disagree”, “fully disagree”, or “don’t know”. We chose the policy of elderly care for two reasons. First, since elderly care is a salient but not very controversial topic in Danish politics, and since the issue of senior citizens’ rights to be treated decently by the public authorities has hit the media agenda several times in recent years, we expect that citizens will generally have a positive attitude towards this policy proposal. Second, although this attribute of the proposal is not necessarily salient to respondents, it should seem reasonable that the service comes at a cost.

In treatment group II, the respondents were confronted with a slightly different version of the same question (treatment in italics): “Imagine that a proposal is made that senior citizens serviced by the municipal elderly care is offered an extra bath each week, *with the costs associated with this service*. To what extent do you agree or disagree with this proposal?” In treatment groups III, the question was (treatment in italics): “Imagine that a proposal is made that senior citizens serviced by the municipal elderly care is offered an extra bath each week. *According to calculations, the yearly costs will correspond to 1,500 Danish kroner per senior citizen benefitting from the proposal*. To what extent do you agree or disagree with this proposal?” In treatments IV and V, the costs were DKK 5,500 and DKK 9,500, respectively. The

medium costs of DKK 5,500 is based on a calculation made in a Danish municipality of average size and thus reflects a realistic estimate of costs, although true costs will of course vary somewhat across municipalities.⁷

Hence, as seen from the standard argument, this policy proposal is in some cases supplied with information on costs. Seen from the perspective of the attention model of fiscal illusion, it is a policy proposal with two important attributes, costs and benefits, where, however, only the attribute costs varies across experimental arms.⁸

PLAUSIBILITY TEST

The data was gathered in two different surveys, both based on a representative sample of Danish citizens. One was conducted in June 2012, the other in February 2013. The two surveys differed slightly in the number of respondents and the number of experimental conditions. As shown in Table 1, the first survey only comprised two conditions: One in which costs were not mentioned at all, and another in which medium costs were mentioned. The second survey, on the other hand, comprised four of the five experimental conditions. The condition with *medium* costs was the only one not appearing in this survey.

<Table 1>

⁷ While the medium cost is a realistic estimate of the costs in average-sized Danish municipality, it must not be confused with the true costs. Since we have no knowledge of the exact true costs, our data do not allow us to infer whether citizens actually underestimate the true costs as predicted by the theory of fiscal illusions.

⁸ A more comprehensive test of the framing model would imply also testing the attribute benefits. Since our theoretical focus is explicitly on costs, we abstain from testing the attribute benefits here.

This obviously raises the question whether the responses from the two surveys are comparable and can be pooled. Our analyses show that our findings in the pooled analysis are essentially the same as the findings in an analysis in which only data from the second survey are included. Moreover, a two-tailed t-test shows that the difference in the mean response on the experimental condition that appeared in both surveys is clearly insignificant ($p > 0.36$). The analyses presented here are therefore based on pooled data in order to retain as much statistical power as possible.

According to H_1 and H_2 the announcement of an exact, realistic cost will decrease the mean support of the proposal because people systematically underestimate the true costs of the proposal. According to H_4 , which is only consistent with the attention model, mentioning costs will in itself affect the mean support of the proposal, even if an *exact* cost is not mentioned. In order to examine the explanatory power of the two theories, we test these three hypotheses in a number of pairwise comparisons using two-tailed t-tests across the experimental conditions. The results are shown in Table 2.

<Table 2>

The main result in Table 2 is that the support for the proposal is significantly higher among the respondents for whom the costs of the proposal were not mentioned than for any of the other groups. This supports hypothesis H_4 and suggests that the use of cost frames is decisive. On the other hand, no statistically significant differences were detected across the four remaining experimental groups, suggesting that it does not matter whether an exact cost is mentioned or how high the value of the mentioned cost is. This is evidence against H_1 and H_2 .

Both of these findings contradict the standard model of fiscal illusion but fits well with the framing model of fiscal illusion (since evidence in contradiction with H_1 and H_2 is in outright opposition with the standard argument but not with the attention model). It may be argued that the exact cost might have been important if more variation had been introduced in the three treatments mentioning exact costs. In other words, if our cost treatments had been stronger, our respondents might have reacted differently. Of course, this cannot be ruled out, but it should be kept in mind that our high cost treatment is 6.3 times higher than the low cost treatment. The difference is equivalent to DKK 8,000, or € 1,100, which is a substantial amount. In addition, the medium cost treatment is realistic, and real costs are not likely to vary much below our low or above our high cost treatment. In this sense, the analysis provides a realistic estimate of the cost effect. Be that as it may, the lack of a statistically significant difference between the effects of the exact and non-exact cost treatments cannot be ignored. It is striking that the mere mentioning of the word costs, as in treatment II, alters people's attitudes just as much as mentioning an exact amount.

The standard argument moreover predicts that the announcement of an exact price decreases the variance of the support of the proposal (see H_3). This can be analyzed by conducting pairwise variance ratio tests across the five experimental conditions. This test tells us whether the ratio of standard deviations in two-group comparisons is different from 1. The findings are presented in Table 3.

<Table 3>

The analysis shows that the standard deviation is significantly lower among respondents who received the first experimental condition than among respondents in any of the other four

groups (all coefficients are significantly lower than 1). This finding contradicts the pattern predicted by the standard argument according to which we would expect the standard deviation to be larger among respondents receiving the first experimental condition than among respondents in any of the three groups where an exact cost was mentioned as part of the question wording. It is somewhat surprising that the mentioning of costs even increases variance in attitudes. One explanation of this may be offered by the theory of asymmetrical illusions (Winter and Mouritzen 2001) according to which core users of public services will almost always support service increases regardless of the costs. Hence, when some respondents are made aware of costs and are likely to decrease their support for the proposal, the variance in attitudes may increase because core users stick to their attitude. Further research is, of course, necessary to settle this question.

In sum, hypotheses H_1 - H_3 derived from the standard argument do not fare well in the plausibility test. Citizens' support for the policy proposal does not depend on the announcement of an exact price and variation in this price, but on whether a cost frame is used (as predicted by H_4). This is evidence in favor of the attention model of fiscal illusion.

CONCLUSION

More than fifty years ago, Downs (1960) famously argued that citizens are rationally ignorant of politics. He also argued that ignorance leads to systematic misperception and biased choices. He pointed out that citizens are not likely to realize the government benefits they receive because most public programs are remote in character. In contrast, citizens are likely to accurately realize

the costs of taxation because of the private benefits they have to sacrifice to pay them. The net result is that citizens systematically underestimate the benefit side of government programs. This is why, according to Downs, the government budget in a democracy is too small.

The fiscal illusion literature argues the exact opposite. According to this literature, citizens systematically underestimate their tax burden and overestimate the benefits they receive from government programs. The net result is that citizens systematically overestimate the benefit side of government programs. This is why, according to the fiscal illusion literature, the government budget in a democracy is too large. Survey studies of citizens' actual knowledge of fiscal parameters fail to find clear and systematic traits of bias. There appears to be no systematic over- or underestimation going on (May 1982; Sørensen 1992; Blom-Hansen 2005; Welch 1985).

These contrasting positions and the nature of the empirical evidence on citizens' knowledge give ground for pause, we think. What exactly is fiscal illusion? The literature has never seriously dealt with this question but ploughed on as if fiscal illusion were a fact that can be used as an assumption for empirical studies of its implication. Thus, the fiscal illusion literature has developed into an empirical literature. The mechanism behind fiscal illusion has remained undertheorized and understudied.

We therefore think that the study of fiscal illusion faces an important theoretical challenge. In order to address this, we suggest a new understanding of the mechanism behind fiscal illusion. The traditional argument is that fiscal illusion is caused by incomplete and biased information. We formalize the standard argument behind fiscal illusion and show that it is a special case of what we call the attention model. According to this model, fiscal illusion can also

be caused by a lack of attention. In this model attention effects, rather than information effects, are the causal mechanism behind fiscal illusion.

In a plausibility test, based on experimental methods, we find evidence in favor of a hypothesis derived from the attention model of fiscal illusion, while hypotheses derived from the standard argument are not supported. We conclude from this that the standard assumption that incomplete information is the driving force behind fiscal illusion may be wrong. The attention model offers an attractive alternative explanation. However, the plausibility test is based on a relatively simple and crude experiment on price and attention effects. How context matters, and how the complex phenomena from the fiscal illusion literature – for example, revenue complexity and revenue elasticity – can be translated into treatments that are amenable to experimental analysis is not straightforward. But we think that this endeavor may be worthwhile undertaking. Furthermore, while our experiment only involves stimuli designed to affect the attention of one attribute, the attention model is more general. Future research could test whether similar effects can be found for other attributes (e.g. the benefits of a proposal).

In contrast to the ad hoc alternative explanations that have been offered of the different manifestations of fiscal illusion – revenue complexity illusion, revenue elasticity illusion, the flypaper effect, renter illusion, and debt illusion – the attention model constitutes a general alternative framework for thinking about the nature of fiscal illusion. This model is inspired by the framing literature (Chong and Druckman 2007), which we believe has much to offer to the study of fiscal illusion – and more than we have exploited in this paper. Framing to influence attention is basically about communication. But who exactly communicates with who when tax structures are designed? And do designers of tax structures deliberately try to manipulate citizens' attention? Another question is whether the framing effect primarily goes through

saliency or whether it also affects evaluations of attributes. Framing theory suggests the former, but this study is not designed to separate the causal paths. These are important questions for future research to address. Likewise, future research may want to vary the benefits of policy proposals as well, as this would provide a stronger test of the attention model than what we have presented here.

While we believe that the framing literature has much to offer to the study of fiscal illusion, we also believe that fiscal illusion studies have something to offer to the framing literature. For example, a contested matter within this research is the longevity of framing effects – a question about which the framing literature has “no idea”, according to Druckman and Nelson (2003: 732; see also Baden and Lecheler 2012; Chong and Druckman 2010) because most studies are based on single-shot survey or lab experiments. It is therefore often unclear how long the attention effect lasts after the experiment has been conducted. If tax structures have attention effects, this might work as a framing effect that is frozen in time because tax structures, unlike interventions in traditional framing experiments, may last for years. However, the extent to which such a frozen effect can be sustained, mediated, or counteracted by additional, distorting or competing signals in the tax structure are important questions for future research to address.

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APPENDIX

To see why a higher saliency of the cost-attribute, w , must generally lead to decreased support (and vice versa), consider (5). Since $(1 - w)B - wC > 0$ is identical to $B - xC > 0$, with $x = w/(1 - w)$, $0 \leq x \leq 1$ we have:

$$(6) \quad P((1 - w)B - wC > 0) = 1 - \Phi\left(-\frac{(1-w)\mu_B - w\mu_C}{\sqrt{(1-w)^2\sigma_B^2 + w^2\sigma_C^2}}\right) = 1 - \Phi\left(-\frac{\mu_B - x\mu_C}{\sqrt{\sigma_B^2 + x^2\sigma_C^2}}\right).$$

Differentiating the argument of Φ with respect to x yields:

$$(7) \quad (\mu_C\sigma_B^2 + x\mu_B\sigma_C^2)/(\sigma_B^2 + x^2\sigma_C^2)^{3/2}.$$

Since (7) must always be positive, the argument of Φ is increasing in x , which implies that Φ is increasing in w . Since the probability is given by $1 - \Phi(\cdot)$, the probability of support decreases when w increases.

FIGURE 1
Effects of Fiscal Illusion

Source: Wagner (1976).

TABLE 1**Descriptive Statistics**

Treatme nt	Content	Survey	N	Mean	Std. Dev.	Mi n	Ma x
I	No cost frame	No. 1	614	4.282	0.902	1	5
I	No cost frame	No. 2	484	4.333	0.939	1	5
II	Cost frame	No. 2	472	4.057	1.009	1	5
	No exact cost mentioned						
III	Cost frame	No. 2	420	4.102	1.011	1	5
	Low costs mentioned						
IV	Cost frame	No. 1	527	3.975	1.042	1	5
	Medium costs mentioned						
V	Cost frame	No. 2	463	3.965	1.081	1	5
	High costs mentioned						

TABLE 2

Testing Mean Differences

	No cost frame; no exact cost	Cost frame; no exact cost	Cost frame; low costs	Cost frame; medium costs	Cost frame; high costs
(I) No cost frame; no exact cost	X	0.25**	0.20**	0.33**	0.34**
(II) Cost frame; no exact cost		X	-0.05	0.08	0.09
(III) Cost frame; low costs			X	0.13	0.14
(IV) Cost frame; medium costs				X	0.01
(V) Cost frame; high costs					X

Entries are differences in means. A positive value indicates that the mean of the variable mentioned in the column to the left is larger than the mean of the variable mentioned in the upper row. Higher values indicate higher support for the policy proposal for respondents who received the proposal in the column to the left relative to those who received the proposal mentioned in the upper row. Tests are two-tailed t-tests; **: $p \leq 0.01$; *: $p \leq 0.05$.

TABLE 3

Variance ratio tests

	No cost frame; no exact cost	Cost frame; no exact cost	Cost frame; low costs	Cost frame; medium costs	Cost frame; high costs
(I) No cost frame; no exact cost	X	0.91*	0.91*	0.88**	0.85**
(II) Cost frame; no exact cost		X	1.00	0.97	0.94
(III) Cost frame; low costs			X	0.97	0.94
(IV) Cost frame; medium costs				X	0.96
(V) Cost frame; high costs					X

Entries are variance ratios with values less than one, meaning that the standard deviation of the variables mentioned in the column to the left are smaller than the standard deviations of the variables in the upper row. Tests are two-tailed variance ratio-tests; **: $p \leq 0.01$; *: $p \leq 0.05$.