The impact of career concerns and cognitive dissonance on bureaucrats' information searching activities

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Abstract: Previous research shows that Cost-Benefit Analysis (CBA) is seldom conducted in Sweden. We explain why bureaucrats may choose (not) to do a CBA with cognitive- and search costs. Given the initial policy chosen by an agenda setter, bureaucrats who stay working at an agency have policy preferences close to the initial policy; those with reservation wages above a threshold quit. The bureaucrats' preferences converge to the initial policy level over time. A CBA reveals the inefficiency of the initial policy and the bureaucrats consequently have no incentive to do one, except in the presence of a binding governmental budget constraint.

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1. Introduction

Civil servants working for a governmental agency may have real authority (Aghion & Tirole, 1997) and influence policy design (Faber, et al., 2002; Uba, 2010; Berkowitz & Krause, 2017). But why do civil servants recommend the decisions they do, often based on lacking information? In this paper we answer this question based on a model of cognitive dissonance (Festinger, 1957) in a career concerns framework (Alesina & Tabellini, 2007).

Wilson (1989) notes that while the utility of a business person can reasonably be assumed to be profits, bureaucrats are driven by salary, rank, power (p. x), or by the impact of profession (p. 60) (throughout, we use "civil servants" and "bureaucrats" interchangeably). Dewatripont et al. (1999b) point out that a distinguishing feature between government agencies and private companies is that the former are instructed to pursue social welfare objectives while the latter are asked solely to maximize shareholder value. Gregg et al., (2011) show that individuals self-select themselves so that the more pro-social individuals will, to a greater degree, work for the non-profit sector (for an overview of the prosocial behavior among bureaucrats, see Polidori and Teobaldelli (2013)). Brady et al., (1995) argue that the public agents use their position in the administration to further their own goals, achieving this by creating cognitive dissonance among the public. Rothstein (2016) on the other hand notes that democracies should deliver policies that are "true" in an epistemological sense. In order to know which policies are "true", the question should be related to empirical investigation of whether policies that can be said to be "in the interest of people," are actually implemented.

Several methodologies for eliciting a measure of the social welfare, or an idea of the "true" policy, exist. The most common are the regulatory impact analysis (RIA), and the cost-benefit analysis (CBA), which can be a part of the former.[1]

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[1] For example, Asplund and Eliasson (2016) show why making a CBA is preferable to not doing one, even given the uncertainties inherent in the CBA estimates. Sunstein (2019) makes an

A CBA or a RIA is regularly conducted in, e.g., the US (Cropper et al., (1992) for environmental policy; Sunstein (2000)), the Netherlands (Mouter, et al., 2013; Mouter, 2016) and Norway (Sager, 2016; Welde, et al., 2013). Even the European Union requires the use of RIA (European Commission, 2009). Neither of these analyses is commonly conducted in Sweden when decisions about environmental, energy, and climate change policy are made, however (Samakovlis & Vredin Johansson, 2005; 2007; Pyddoke & Nerhagen, 2010; Broberg, et al., 2010; Hansson & Nerhagen, 2016). According to Hultkrantz (2009), the only areas of policy-making where an economic analysis is regularly made in Sweden are with regard to the prices and subsidies paid for medicines, and when transport infrastructure projects are chosen. Moreover, even in countries and policy areas where a CBA may be done, it is often either made too late (Mouter, et al., 2013), it is of poor quality (Nerhagen, et al., 2017), or its conclusions do not affect the ultimate decision (Sager & Ravlum, 2005; Welde, et al., 2013; Sager, 2016). The question that arises is why some governmental agencies are more reluctant to conduct a CBA than others?

The present paper uses the lack of use of an RIA and/or CBA in Sweden as its starting point. Nevertheless, the paper is applicable to any country with a bureaucracy which has real authority and is expected to perform background analyses for policy. We construct a model where an individual civil servant's career prospects (the rent they can extract, the fact of whether they stay employed by a given agency or not) are not only affected by the effort they put into their work, but also by their professional norms, and the cognitive dissonance that may arise between these norms and the goals of the organization they are working for. Cognitive dissonance is the unpleasant

argument for conducting a CBA ahead of decision-making in terms of "thinking slow" (see also Kahneman (2011)), i.e., that a CBA reduces at least two common fallacies of thinking, namely the framing effect and loss aversion. Rose-Ackerman (2007) argues for the use of a CBA because it constitutes a reasonably clear standard that can make special interest deals harder to accomplish, without tying the hands of the state.

tension or disutility that arises when a bureaucrat has to promote a level of public good provision that differs from their preferred one, regardless of whether this preference is based on a professional norm, a private belief, or the bureaucrat's belief of what is socially optimal (Eggert, et al., 2016). As stated originally in Festinger's seminal work (1957), cognitive dissonance theory proposes that the bureaucrat is motivated to reduce this tension and may, in the context of the present paper, achieve this either by adapting her own preferences towards the agency's goal policy, or by changing jobs (quitting). We show that because of the cognitive adjustment that an individual experience over time, the rent obtained from being employed by a given agency increases over time. However, the longer the individual remains employed by the agency, the lower is her propensity to conduct a CBA that might challenge the agency's and the individual's preferred policy choice. Only in agencies whose supply of the public good is restricted by a binding governmental budget constraint may the civil servants have an incentive to conduct a CBA, given that it may influence the budget constraint.

The literature on the impact of cognitive dissonance on bureaucrats' behaviour is not large. Brady et al., (1995) explain how public sector agents can use the manipulation of dissonance for their own ends to achieve their own goals by changing the perceptions of the public. Unlike the present paper they do not consider how the cognitive dissonance experienced by the bureaucrats themselves influences their behaviour, and consequently their model cannot be used to assess the propensity of public agents to conduct a CBA. Konow (2000) examines the cognitive trade-off arising from a public agent either forwarding her own material utility or "fairness". Using variations of the so-called "dictator game" his experiments corroborate both the fairness and cognitive dissonance components, and show that "unfair" behaviour may be attributed rather to self-deception than to unadulterated self-interest. Interpreting fairness as a strive to achieve an outcome as close to the socially optimal one as possible, and self-interest as the public agent's preferred policy, the present paper assumes that

the agent can adjust her preferences, being in fact "untrue" to their professional norms (self-deception in Konow's terms). While Konow assumes that the "fair" outcome is known, we assume that this is not the case, however, but that a CBA will have to be conducted in order to find the "true" policy. We then add to Konow's analysis both by analysing the stability of the "unfair" outcome, and by examining one factor that might lead the agent to deviate from her preferred outcome, namely a binding governmental budget constraint.

The present paper is organized as follows: In the next section we review three types of literature relevant for the paper. We first survey some of the career concerns literature. Thereafter we summarize some lessons from a literature studying the use of CBA in different countries, by politicians and civil servants. We end with a short look at the literature on cognitive dissonance. The literature survey thus excludes some interesting strands of literature, e.g., principal-agent models, which are of less direct interest for the present paper. Once we have a grasp of the literature, we construct a theoretical model in Section 3. Policy outcomes from the model with cognitive dissonance are presented in section 4. Section 5 extends the model to explain the incentives for some agencies to conduct a CBA by including a governmental budget constraint in the model. The last section discusses the results and concludes.

2. Literature

2.1. Career concerns

Employees in governmental agencies regularly both propose policies to the elected politicians and make own decisions. But why do civil servants make or recommend the decisions that they do? This has partly been explained by career concerns models (Holmström 1999, Dewatripont et al., 1999a, 1999b, Maskin and Tirole 2004, Alesina and Tabellini 2007, 2008). Dewatripont et al. (1999a; 1999b) examine the impact of information on bureaucrats' careers, what drives civil servants, which goals they pursue and what distinguishes government agencies and private firms. They show, among others, how information about

civil servants' ability may affect the market assessment of their future productivity, how professionalization of a governmental agency creates a sense of mission for the agency, and how the specialization of officials raises their incentives. Maskin and Tirole (2004) examine the incentives for elected representatives to act in the public interest under a constitution with three alternative modes for making decisions: (i) direct democracy, (ii) representative democracy and (iii) judicial power, in which a non-accountable official decides (see also Alesina and Tabellini (2007; 2008). The focus is on two motivations in particular, namely an official wanting to be remembered for 'great things', regardless of whether these 'things' are congruent with society's best or not, and on the value given to being in office for its own sake. The focus is on how the public can use these two motives in order to make the official accountable. Accountability can have drawbacks, too, however, for instance the official pandering to public opinion.

Holmström (1999) studies how a person's concern for a future career may influence their incentives to put in effort or make decisions on the job. Holmström models this by assuming that the person's productive abilities are revealed over time through observations of performance. Since the wage in each period is based on expected output and this in turn depends on assessed ability, today's performance is linked to future wages. A fundamental incongruity arises from the individual's concern for human capital returns and the firm's concern for financial returns. The conclusion is that career motives can be beneficial as well as detrimental, depending on how well the two kinds of capital returns are aligned.

2.2.   Studies on the use of CBA

In the introduction we referred to a number of Swedish studies that show that a CBA is not regularly conducted in conjunction with decision-making about environmental, energy, and climate change policy. In this section we will review some empirical studies on the use of a CBA.

The use of CBA by politicians on one hand and by non-elected bureaucrats on the other is studied empirically by Eliasson and Lundberg (2011). They show that while the Swedish bureaucrats' ranking of national transport infrastructure projects broadly speaking follows the recommendations from the CBA, the politicians' ranking is not influenced by the CBA results. Welde et al. (2013) compare the use of CBA to choose transport infrastructure projects in Norway and in Sweden. They show that while the CBA results influence the overall project ranking in Sweden, no such effect can be found in Norway. Welde et al. study does not consider the bureaucrats' ranking separately from the politicians', however. Nyborg (1998) interviews Norwegian politicians in order to find out whether they use information from a CBA when choosing transport infrastructure projects. She finds that the attitudes towards the CBA vary along a left-right political axis, with politicians to the left being the most sceptical. Sager and Ravlum (2005) show that while the civil servants at the Norwegian Public Roads Administration conduct more and more sophisticated CBA:s, the politicians in the Standing Committee on Transport and Communications choose to ignore these results.

Mouter et al. (2013) interviewed 86 Dutch 'key actors'' to find out about their attitudes towards the role of CBA in the decision-making process for spatial-infrastructure projects. They find significant differences in the attitudes of persons specializing in economics, in contrast to spatial planners or transportation specialists, with regard to the use of CBA.

Bäcklund (2009) and Mouter (2016) study politicians' and civil servants' use of a CBA in the European commission and in the Netherlands, respectively. While Bäcklund identifies three main barriers to the use of Impact Assessment (IA) in European policy-making, Mouter discusses seven barriers to Dutch politicians' use of CBA in decision-making (see even Sager and Ravlum (2005) for the case of Norway). Firstly, the politicians sometimes consider the process of forming an opinion as a trivial task and claim that a CBA does not add to, for example, their ideological predisposition towards a project. Secondly, many politicians

prefer forming their opinion based on conversations rather than on reading reports. There are exceptions to this rule, however, so that some politicians gain an edge over their colleagues by having read the CBA results and being considered a knowledgeable person. Thirdly, many politicians do not trust the impartiality of the CBA (see even Bäcklund (2009, p. 1084); Sager and Ravlum (2005, p. 38)). The fourth barrier to using CBA is that some politicians contest the normative premises implicit in a CBA (even Sager and Ravlum (2005, p. 38)). This may be due to the discrepancy between the premises of a CBA and their own belief systems, which coincide with their own belief systems scoring relatively poorly in the CBA results. A fifth explanation is that politicians think that the explanatory power of a CBA is limited. Sixthly, due to the particularities of the Dutch politics, namely that there is one big yearly debate about infrastructure investment in the Parliament and the fact that the MPs often receive the CBA results only a few days before this debate, the CBA results become available too late for the MPs to use them to form their opinion. Finally, it is clear that politicians care less about the social profitability of a project when there is enough money. This is manifested in the increased weight given to the CBA results in the post-financial crisis period since 2010. Bäcklund (2009) further notes that the presentation of the information may be such that it is difficult for the decision makers to identify key aspects and figures. Bäcklund concludes that according both to the environmental lobby, researchers, and to EC officials, most IA:s are carried out in order to justify a policy choice already made.

Mouter (2016) nevertheless identifies four situations where politicians have found the CBA results to be useful. Thus, the Minister of Finance has used CBA results to stop projects with negative net present value (see even Sager and Ravlum (2005, p. 39)). Moreover, the results are used in the discussions between the Minister of Transport and regional politicians. In those negotiations, the minister regularly uses a negative CBA as an argument for not funding a project. CBA results are also used in discussions with stakeholders

and citizens and to verify the correctness of arguments brought forward by lobbyists (Sager & Ravlum, 2005, p. 40). CBA results are also used in political debates. Especially the minsters consider CBA to be a very powerful tool for rationalizing decisions and to 'kill' the political debate. On the other hand, for a minister to defend a project with a negative CBA requires much more preparation, too. Finally, CBA is used for symbolic purposes, for example, to give a politician a 'rational set of arguments' for (against) a project. Bäcklund (2009) notes that IA can be used to ensure transparency and cohesion in the policy process, and in order to enhance the legitimacy of the negotiated proposal.

Finally, Bäcklund (2009, p. 1080) notes that the way an IA is conducted is contingent on the assessment leader's educational background. Moreover, she cites Turnpenny et al., (2008) who note that one reason for the limited use of formal tools "are the perceived superiority of 'expert judgement', a widespread unfamiliarity with the tools themselves, and a scepticism about their ability to handle value-based judgements."

Attitudes and ideological preferences thus seem to be an important explanation to whether a politician or a bureaucrat see a CBA as an important tool or not. We now turn to the literature on cognitive dissonance and norms.

2.3.   Norms, identity, and cognitive dissonance

Akerlof and Kranton (2000; 2005) discuss social rules, i.e., social norms. These norms refer to how people think that they and others should behave. Norms become internalised during the development of a person's identity or sense of self (Wichardt, 2012). Wichardt (2012, p. 344) argues that the impact of norms on utility render behaviour which is not consistent with the internalised social norms, e.g., professional norms, costly, thereby implying that any such behaviour, in general, will occur less frequently.

Rule-following and identity fulfilment are important aspects of decision-making. Identities can be seen as social constructs, where "social systems

socialize and educate individuals into rules associated with… position identities" (March, 1994, p. 58). Organizations shape and define their employees' identity. As identities and roles are defined, individuals behave and perform according to the rules of the organization. This is one possible process for creating an organizational culture. In the present paper, however, we explain organizational culture based on adaption through cognitive dissonance.

Festinger (1957) defines cognitive dissonance as "an uncomfortable feeling caused by simultaneously holding two contradictory cognitions. These cognitions may be attitudes and beliefs or awareness of one's own behaviour… people have a motivational drive to reduce dissonance by changing their attitudes, beliefs or behaviours" (Alfnes, et al., 2010, p. 147).[2] More specifically, the term refers to the case where an individual out of her own volition behaves in a way that is incompatible with her overall perception of self-integrity. The discrepancy between ideal and actual behaviour causes a kind of mental distress that is called cognitive dissonance. Above all, cognitive dissonance creates a significant hinder for norm-breaking behaviour to occur. (Wichardt, 2012, p. 344).

An important feature of cognitive dissonance noted by Wichardt (2012, p. 345) (see even Akerlof and Dickens (1982)) is that "Dissonance arousing behaviour must be perceived as: (a) having been freely chosen… (b) having little external justification…, and (c) entailing a commitment" (Nail, et al., 2004). Cognitive dissonance can then be seen as a price for norm violations in these situations. Moreover, different people have different "reservation prices" for norm-disobedient behaviour in the same or similar situations (Wichardt, 2012). In the context of the present paper, the bureaucrat, faced with cognitive dissonance,

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[2] Brady et al., (1995) give a short explanation as to how cognitive dissonance differs from "regret". The theory of regret involves the notion that some decision-makers are rational investors who do not attempt to maximize expected utility, but rather adhere to a principle of "minimax-regret".

has two options: either to stay and adjust their preferences, or find a new job. Therefore, they make their decision out of free will, even though there may be an external justification for their behaviour.

Ellingsen et al., (2012) argue that evidence indicates that social frames enter people's beliefs rather than their preferences. Consequently, we can assume that even civil servants are utility maximizers, and that their preferences are not context dependent. An alternative to this view is one which asserts that civil servants can have preference orderings that can differ for the same individual depending on the context and the role in which the decision is taken (Eggert, et al., 2016). This is operationalized by the concepts of Homo Economicus and Homo Politicus. The former refers to individual welfare maximization while the latter is founded in political philosophy and focuses on the human interest in justice and the well-being of the community (Faber, et al., 2002). While a Homo Economicus maximizes private welfare, a Homo Politicus maximizes aggregate welfare.

Acharya et al., (2015) build a formal model of attitude change. They model cognitive dissonance by assuming that the decision-maker maximizes some function of their starting attitude and an action. If the action and the starting attitude are not equal to one another, the decision-maker suffers from cognitive dissonance, and may incur a cost of changing the attitude. We will, in the following, build on this model.

3. The model

We assume that individuals maximize welfare, which can be aggregated into social welfare by using a utilitarian welfare function with equal weights given to all individuals. We build on a career concerns model based on Alesina and Tabellini (2007) and on a model of cognitive dissonance by Acharya et al. (2015). The basic assumption of the model is that an individual civil servant can influence public decision-making, i.e., that an individual bureaucrat has real authority (Aghion and Tirole (1997); for decision-making in American states,

Berkowitz and Krause (2017), for an empirical investigation of German environmental administrators, Faber et al. (2002) or a study of who formulates Swedish environmental and energy policy, Uba (2010)). We further assume that the bureaucrats are influenced by professional norms (Wilson, 1989) which we do not model. A final assumption is that a CBA, if made by the civil servants, will reveal the true social welfare; there is no uncertainty, and the CBA is assumed to be "perfect".

3.1.   The economic background

Consider an economy consisting of H individuals denoted by superscript $h = \{1,2,\dots,H\}$. There is a private good, z, and individuals also derive utility from a non-rival and non-excludable public good, g, the utility function being $q^h(g) \geq 0$. We arrange the population in the order of their preferences for the public good so that $q^1 < q^2 < \cdots < q^H$. Utility from the public good is assumed to be increasing and concave in g, i.e., $q_g > 0, q_{gg} < 0$, the subscripts denoting differentials. We assume utility from public good consumption to be normally distributed in the population with a mean $\bar{q} = \sum_{h=1}^{H} q^h(g)/H$ and variance σ_q^2: $q^h(g) \sim N(\bar{q}, \sigma_q^2)$. We assume quasi-linear utility with additively separable preferences. Normalizing the price of the private good z^h to one, utility takes the form $u^h = z^h + q^h(g)$.

The government determines public good policy, namely its supply. The provision of the public goods is costly, the cost being given by $c(g)$. We assume the cost function to be strictly convex, i.e., $c_g(g) > 0$ and $c_{gg}(g) > 0$.

We assume that the cost of public good provision is borne entirely by the taxpayer, who pay for the provision in equal shares: $c(g)/H$. An individual earns an income gross of effort, equal to r^h, with the consumption of the private good being equal to $z^h = r^h - c(g)/H$. An individual's indirect utility is then given by

$$v^h(g) = r^h + q^h(g) - \frac{c(g)}{H}.$$

Summing indirect utilities over all individuals yields aggregate welfare:

$$(2) \qquad W(g) \equiv R + Q(g) - c(g),$$

where $\sum_{h=1}^{H} r^h = R$ is the aggregate income and $Q(g) = \sum_{h=1}^{H} q^h(g)$ is the aggregate welfare from public good consumption. Solving for the socially optimal level of provision, denoted by g^* we maximize equation (2) with respect to (w.r.t.) to the policy choice, g. This yields the familiar condition:

$$(3) \qquad Q_g(g^*) = c_g(g^*),$$

i.e., the aggregate marginal benefit from the consumption of the public good must equal the marginal cost of producing the good.

3.2.   Civil servants

$J \ll H, J \in H$ civil servants in a governmental agency or ministry prepare a background analysis and a proposal for policy g.[3] Consider a civil servant $j \in J$ with a normally distributed starting attitude $q^{j0}(g^{j0}) \sim N\left(\bar{q}^{J0}, \sigma_{q^{J0}}^2\right)$, where the superscript 0 denotes a starting attitude, which is fixed (given originally by the professional norm), the mean attitude among civil servants being $\bar{q}^{J0} = \sum_{j=1}^{J} q^{j \in J}(g)/J$ and the variance $\sigma_{q^{J0}}^2$.

The bureaucrat may be confronted with cognitive dissonance because the organizational goals of the governmental agency or ministry may differ from the civil servant's professional norms. In order to have a career, they will not only have to exert effort (e^j), but may also need to adjust their professional

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[3] The final decision may still be made by politicians motivated by re-election and may deviate from the one proposed by the bureaucrats.

norm, which is costly. This adjustment is voluntary, however, since the bureaucrat could always choose the exit option (quit).[4]

The bureaucrat takes a policy action g^j that maximizes an attitude function $\pi\left(q(g), q^{j0}(g^{j0})\right)$. The action g may in some circumstances be chosen by the individual but may also be assigned by the employer (e.g., through a collegial way of decision-making, by a chief, political orders etc.). The policy outcome based on function π and effort, e^j, is given by:

$$(4) \qquad g = \pi\left(q(g), q^{j0}(g^{j0})\right) + e^j,$$

Effort and attitudes are assumed to be additive.

Suppose that the maximizer of $\pi\left(q(g), q^{j0}(g^{j0})\right)$ over $X \subseteq \mathbb{R}^n$ is unique and let g^{max} denote it. In the case that the action is assigned, $g^{max} \neq g^{j0}$, and the action taken is exogenous to the individual's preferences (Acharya, et al., 2015, p. 5).[5] Then, the decision-maker experiences a cognitive dissonance cost, and may want to change their attitude from g^{j0} to a new attitude g^{jt}. Changing attitudes is costly. Denoting the strictly convex and increasing cost of changing the attitude by $\delta\left[e^j\left(|g^{j0} - g^{jt}|\right)\right]$, and the likewise strictly convex and increasing cognitive dissonance cost by $d\left[e^j\left(|g^{jt} - g^{max}|\right)\right]$, the intensity of the discomfort increases with the discrepancy between the individual's initial attitude and the behavior that they have executed. Note that both cognitive costs are functions of effort e^j. A bureaucrat strives to minimize the cognitive costs.

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[4] The mechanism here resembles closely that in Akerlov and Dickens (1982), who exemplify cognitive dissonance with workers in hazardous industries. These workers, too, choose to stay at their jobs despite cognitive dissonance, reducing this dissonance over time by convincing themselves of their work not being so hazardous after all.

[5] The case where the bureaucrat's preferences exactly match those of the employer, i.e., when $g^{max} = g^{j0}$, is trivial.

The civil servant faces the following participation constraint:

(5) $$\mathrm{E}\left[r\left(e^j\right)\right] - c^e\left(e^j\right) \geq 0,$$

where $r\left(e^j\right)$ is the gross reward function and E denotes unconditional expectations over effort, e^j. Effort at work is costly, and this strictly convex and increasing cost is labelled $c^e\left(e^j\right)$. We define $c^e\left(e^j\right)$ below. A bureaucrat whose participation constraint is not met will not be interested in staying at their job.

The timing of events is as follows. A civil servant has a professional norm denoted by g^{j0}. They get employed by a governmental agency with a policy goal given by g^A. This policy goal may or may not be equal to the socially optimal policy. Next, the civil servant chooses effort, e^j, and simultaneously, if the civil servant's professional preferences do not coincide with the agency's policy goals, they experience cognitive dissonance and may choose to change their professional norm. Finally, outcomes are observed, and the reward is paid. Only the outcome g is observed by the principals, not its composition between effort and attitudes. Hence the agent's reward can be based only on the policy outcome, g.

4. Policy outcome with cognitive dissonance

4.1. Choice with cognitive dissonance

The goal policy facing the bureaucrat is thus denoted by g^A. Assume that the goal policy level of public good provision always exceeds the socially optimal level of provision, so that $g^{max} = g^A > g^*$.[6]

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[6] This assumption may seem restrictive. However, if the employer's agenda is set by a single individual, then the agenda setting level of public good provision will only equal the socially optimal level if the agenda setter's preferences equal the average marginal preferences of the entire population. The probability of this occurring is zero. Similarly, if the goal policy is chosen by a committee, which sets the goal level of public good provision at the committee members' average level, the probability of this level being equal to the social optimum is zero. According

Given that g^A is the relevant measure of performance with which the civil servant is evaluated, the civil servant's reward gross of effort is assumed to be (Alesina & Tabellini, 2007, p. 171):

$$r(e^j) = \alpha \mathrm{E}\left\{ E\left[\pi\left(q(g^A), q^{j0}(g^{j0}) \right) | g^A \right] \right\},$$

where α is the market value of the civil servant, and E denotes expectations over π, conditional on the realization of g. The civil servant's career prospects are thus a function of her attitude function π. Denoting the public's perception of effort, e^j, by $e^{\mathrm{E}j}$ and using equation (4), we can write the bureaucrat's reward function as

(6) $\qquad r(e_j) = \alpha \mathrm{E}[g^A - e^{\mathrm{E}j}] = \alpha \mathrm{E}\left[\pi\left(q(g^A), q^{j0}(g^{j0}) \right) + e^j - e^{\mathrm{E}j} \right].$

We assume that the effort put into work by a civil servant is a function of the goal policy level, of her initial attitudes and of the exertion required to change attitudes, so that $e^j \equiv e^j(g^A, g^{j0}, g^{jt})$. We define the effort cost function as:

(7) $\qquad c^e(e^j) = s\left[e^j\left(|g^{j0} - g^A| \right) \right] + d\left[e^j\left(|g^{jt} - g^A| \right) \right]$
$$+ \delta\left[e^j\left(|g^{j0} - g^{jt}| \right) \right].$$

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to this reasoning, the goal level of public good provision either falls short or exceeds the social optimum. However, as was argued in Section 1, the agenda setters in Sweden most of the time do not do a CBA. This means that the costs of the policy may be underestimated, two recent examples being the Government Official Rapports that set out a strategy for Swedish climate policy (Miljömålsberedningen, 2016:21) and for climate and clean air (Miljömålsberedningen, 2016.:47). If the costs are underestimated, then even an agenda setter with lower-than-the-population-average preferences for the provision of the public good may choose a level of public good provision that exceeds the social optimum. As is shown by Uba (2010), Swedish bureaucrats tend to prefer quite environmentally friendly policies. Carlsson et al., (2011) and Eggert et al., (2016) conduct empirical studies that show that the bureaucrats at the Swedish Environmental Protection Agency prefer policies that are stricter than those preferred by the general public.

s is the search cost function, which is greater the larger the discrepancy between the imposed policy, g^A and the preferred policy, g^{j0}. The search cost function is assumed to be strictly convex and increasing in the distance between the optimal policy and the bureaucrat's preferred policy. Besides the search cost, the cost of effort is also a function of the remaining cognitive dissonance cost, and of the cognitive adjustment cost. If the action g^A could be chosen freely by the buraucrat, both the cognitive dissonance cost and the cost of changing attitudes would be trivially zero. The greater the discrepancy between the g^A, g^{j0} and g^{jt}, the greater is e^j and the higher the effort cost.

A revenue maximizing and effort minimizing civil servant maximizes her welfare given by equation (1) with respect to e^j. Using the participation constraint, equation (5), substituting in equations (6) and (7) on both sides, we can solve for the bureaucrat's reservation wage α as:

$$(8) \qquad \alpha = s_e\big[e^j\big(|g^{j0} - g^A|\big)\big] + d_e\big[e^j\big(|g^{jt} - g^A|\big)\big]$$
$$+ \delta_e\big[e^j\big(|g^{j0} - g^{jt}|\big)\big].$$

The reservation wage thus equals the civil servant's marginal cost for effort.

If the civil servant's initial preference for policy equals the goal policy, then $\alpha = s_e(0)$. This is the true value of the bureaucrat to the society (Alesina & Tabellini, 2007, p. 172).

When the bureaucrat's initial preference for public good provision differs from the agenda setting policy, that is, $g^{j0} \neq g^A$, the market value of the civil servant differs from the true value to the society. Doing comparative statics on equation (8) yields the following proposition which elaborates on the changes to a bureaucrat's market value as her initial preferences vary:

Proposition 1. The further away from the agenda setting policy g^A a civil servant's initial attitude (g^{j0}) is, the higher is her reservation wage.

Proof: Totally differentiating (8) with respect to the bureaucrat's initial attitude, g^{j0}, yields the proof of Proposition 1:

$$\frac{d\alpha}{dg^{j0}} = s_{ee} + \delta_{ee} > 0,$$

Since we have assumed the cost functions to be strictly convex, the second order conditions are positive. The reservation wage then increases as g^{j0} shifts further away from the goal policy in either direction, upwards or downwards. A change in the bureaucrat's initial attitude in the direction of the goal policy thus lowers her salary request. ∎

While we described α above as the market value of the civil servant, in Proposition 1 we have solved for the bureaucrat's reservation wage. This is because a bureaucrat maximizing her own welfare function will require at least this level of salary in order to satisfy her participation constraint, equation (5).

A bureaucrat with deviating preferences compared to the goal policy cannot reasonably be rewarded for this, however. While the governmental agencies may have a policy of setting "individual salaries," there is a definite limit to how much an agency would be willing to pay. Assuming that all civil servants are paid the same salary, we formulate the following proposition:

Proposition 2. The marginal civil servant employed by a governmental agency will earn their reservation wage, given by equation (8). All other civil servants will be earning economic rent which is the difference between the marginal civil servant's salary and their own reservation wage.

Proof: The proof relies on the assumption that preferences among civil servants are distributed according to $q^{j0} \sim N\left(\bar{q}^{j0}, \sigma^2_{q^{j0}}\right)$ and that $J > 0$. The agency will then have to pay a wage higher than the above-defined "true value of the bureaucrat," $\alpha = s_e(0)$ to the marginal civil servant. The other civil servants whose participation constraint, equation (5), is satisfied will have a reservation wage at most as high as the marginal individual's reservation wage. They will

then be earning an economic rent equal to the difference between the reservation wage of the marginal civil servant and their own reservation wage.

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A corollary of Proposition 2 is that the agency prefers employing civil servants with attitudes closely aligned with the agency's goal policy. Rothstein (2016) gives examples of this type of recruitment to Swedish governmental agencies, namely to the National Board for Health and Welfare.

The result in Proposition 2 will of course be modified if the employer can implement "individual wages," knows the civil servants' preferences, and is thereby able to discriminate among the civil servants. Then, the civil servant with preferences closest to q^A will get the lowest salary, despite being the most valuable of the bureaucrats from the employer's preference point of view.

The results in Propositions 1 and 2 can also be used to rationalise the lacking use of CBA. Assume that the goal supply of the public good is set at a level exceeding the social optimum as above. Civil servants are then recruited to implement this policy. Those civil servants that stay at the job are those with preferences similar to the goal policy, with a reservation wage below or equal to that given in equation (8). A CBA would challenge the initial policy by demonstrating that the socially optimal supply of the public good is different from the present level. The civil servants whose preferences are congruent with the goal policy would suffer from cognitive dissonance from having to implement the socially optimal policy, and consequently, they have no incentive for doing a CBA.

4.2. The stability of the agenda setting policy

The goal policy g^A is not necessarily stable. Starting with an examination of the dynamic development of a civil servant's professional norm over time yields the civil servant's long-term equilibrium norm for public good provision. We do not construct a formal model but note that at period $t = 0$, the civil servant has the professional preference for public good supply given by q^{j0}. By period

$t = 1$, this has changed according to equation (7) so that $q^{j0} \leq q^{j1} \leq q^A$ (or $q^A \leq q^{j1} \leq q^{j0}$ if the civil servant's preferences exceed the goal level of public good provision). At the next decision-making time, the civil servant again minimizes costs according to equation (7), again adjusting her professional norm closer to the agenda setting level, but still suffering from some cognitive dissonance cost, thus reaching a norm level given by $q^{j0} \leq q^{j1} \leq q^{j2} \leq q^A$ (alternatively $q^A \leq q^{j2} \leq q^{j1} \leq q^{j0}$). Over time, therefore, the civil servant's professional preferences will approach the goal level of public good provision. This mechanism is in line with, e.g., the one described by Akerlof and Dickens (1982) for workers in a hazardous industry.

The second dynamic aspect concerns the agency's possibilities for recruitment. We illustrate this with the help of Figure 1, where, as assumed above, $g^A > g^*$. The blue line in the figure depicts the normal distribution of preferences for the public good policy among the entire population, and the black distribution function is the density function for the sub-population of civil servants.[7] g^* denotes the social optimum and g^A the agenda-setting level of public good provision. The blue shaded area marks the civil servants whose reservation wage is lower or equal to that given by equation (8), denoted by the horizontal line α.

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[7] The variance of the bureaucrats' preferences could, of course, also be higher than that for the general public. The main point is that the agenda setting level of public good provision exceeds the socially optimal level, and that even the bureaucrats' preferences vary along a normal distribution.
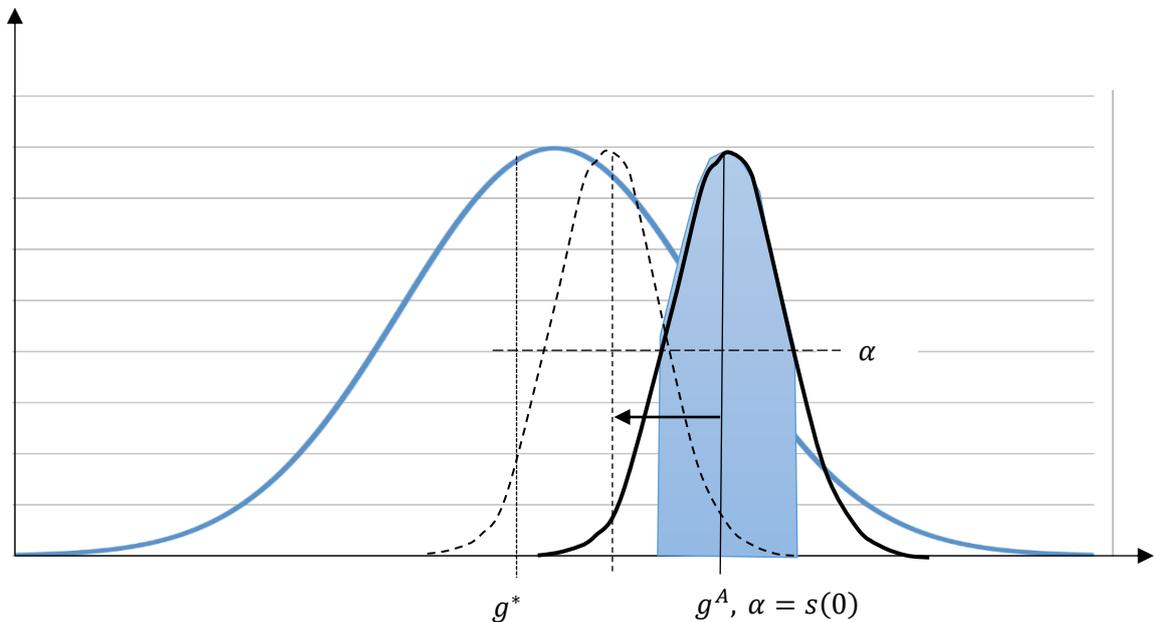
Figure 1. The instability of $g^A \neq g^*$ due to recruitment possibilities.

The instability of g^A arises from the recruiting possibilities of the governmental agency. Given that the bureaucrats are recruited from the general population, the probability of recruiting a person with a professional norm closer to the social optimum is higher than the probability of recruiting a person further away from the social optimum than g^A.[8] If this is the case, over time, the distribution of the civil servants professional norms may move towards the socially optimal policy, marked by the dashed distribution line in Figure 1. This dynamics drive the agenda setting (or target) level of public good provision towards the socially optimal level of provision.

If the social optimum lies "on the other side" of the maximum density of the distribution function, the maximum density may be the closest to the social optimum that the policy may move. Thus, the maximum density level of

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[8] The density of the distribution function for the general population's preferences is higher closer to the social optimum than in the opposite direction.

preferences is a stable equilibrium policy optimum. Regardless of the costs of the policy, it is difficult to reach another stable optimum policy.

The recruitment-driven dynamic may however be negated by the first-analysed dynamic for a civil servant's cognitive adjustment. The first dynamic is the stronger the lower the level of employee turnover. It would then be expected that the older employees' professional norms have adjusted and lie very close to the agenda setting level, and adding a few new recruits will not change this balance.[9]

An additional dynamic aspect is linked to the promotion structure of bureaucracies (Kingston, 2002). While our model does not include the promotion structure, Kingston argues that the only serious reward for a bureaucrat lies in promotion within the bureaucracy. While this is not the case in all countries, e.g., in Australia, Canada and Sweden it is easy for employees to move between the private and the public sectors (Rothstein, 2016) it leads to the bureaucrats becoming dependent on their employer. Two alternatives then arise: either the bureaucrats quit and take employment somewhere else (which would be the case if their participation constraint, equation (5) was not satisfied), or they become "organisation men" who are loyal to the organization, thereby strengthening the system of organizational authority, and also adjusting their own professional norm towards the organization's goal. Kingston argues that, as time passes, selection for promotion of the most cautious and career-minded individuals tighten the bureaucratic organization's hierarchical structure. Risky endeavours become gradually eliminated and the organization

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[9] The question of professional norms is also of interest here. If, for instance, the agency attempts to recruit bureaucrats with a professional norm closer to the social optimum, the first, cognitive dissonance effect still may outweigh the recruitment effect. Moreover, new recruits with very different professional norms compared to the agenda setting level may require quite high salaries to stay working at the agency. Otherwise, the attrition rate will be very high.

becomes standardised in order to limit uncertainty. (Kingston, 2002, pp. 202-203). Under these circumstances it seems unrealistic to expect much convergence of the agenda-setting optimum towards the social optimum.

We now understand why it may not be in the civil servants' interest to conduct a CBA, and have a better understanding of the rents arising from the civil servants' preferences and of the dynamics of the organization. We now turn to the question of why some public agencies in certain policy areas nevertheless conduct CBA:s and why others do not.

5. The impact of a governmental budget constraint

Having explained why civil servants may be reluctant to do a CBA, the question that remains is why a CBA is nevertheless used in some policy areas. In Sweden this is the case for transport infrastructure investments and with regard to the prices and subsidies paid for medicines, but not for the environmental, energy and climate change policy (Hultkrantz, 2009).

One factor that differs between the policy areas where a CBA is regularly made, and those where it is not used, is their impact on the state budget. Both transport infrastructure and subsidies for medicines are considerable expenditures for the Swedish state. Environmental, energy and climate change policies, on the other hand, are mainly paid for by the general public and enterprises, and do not influence the government's budget much. Indeed, some policy instruments, such as the carbon dioxide tax, actually generate revenue for the state, while others, such as the green electricity certificate scheme, are designed to be revenue-neutral from the State's point of view.

For this reason, in this section, we shortly model and discuss the civil servants' policy choice and incentives for doing a CBA when they act under a binding budget constraint. Assume, that for whatever reason, the government's ability to tax the citizens and to provide the public good is limited to $c(g) \leq \hat{c}$. The socially optimal supply of the public good is then obtained by maximizing equation (2) subject to the constraint. Denoting the shadow price of the

constraint by λ, the socially optimal level of public good provision is obtained from:

(9) $$Q_g(g) = (1 + \lambda)c_g(g)$$
$$c(g) = \hat{c}.$$

Because we have assumed the benefits from public good consumption to be concave in g, the restriction lowers the provision of the public good. This is because the cost side of equation (9), including the shadow price of the public good provision, is higher than in the absence of a restriction.

We analyze the incentives to conduct a CBA with the help of Figure 2. Figure 2 is similar to Figure 1 except for the inclusion of the budget constraint, denoted by the thick black line $\hat{g}$.

We start by noting that a budget constraint, in order to be binding, must restrict the supply of the public good below the socially optimal level. Secondly, the budget constraint does not bind if the goal level of policy lies below it; in this case the civil servants prefer a lower level of public good provision than the budget constraint and the analysis in Section 4.1 holds. Therefore, the situation drawn in Figure 2, where the budget constraint lies both below the social optimum and the agenda-setting level of public good provision is the only interesting one.
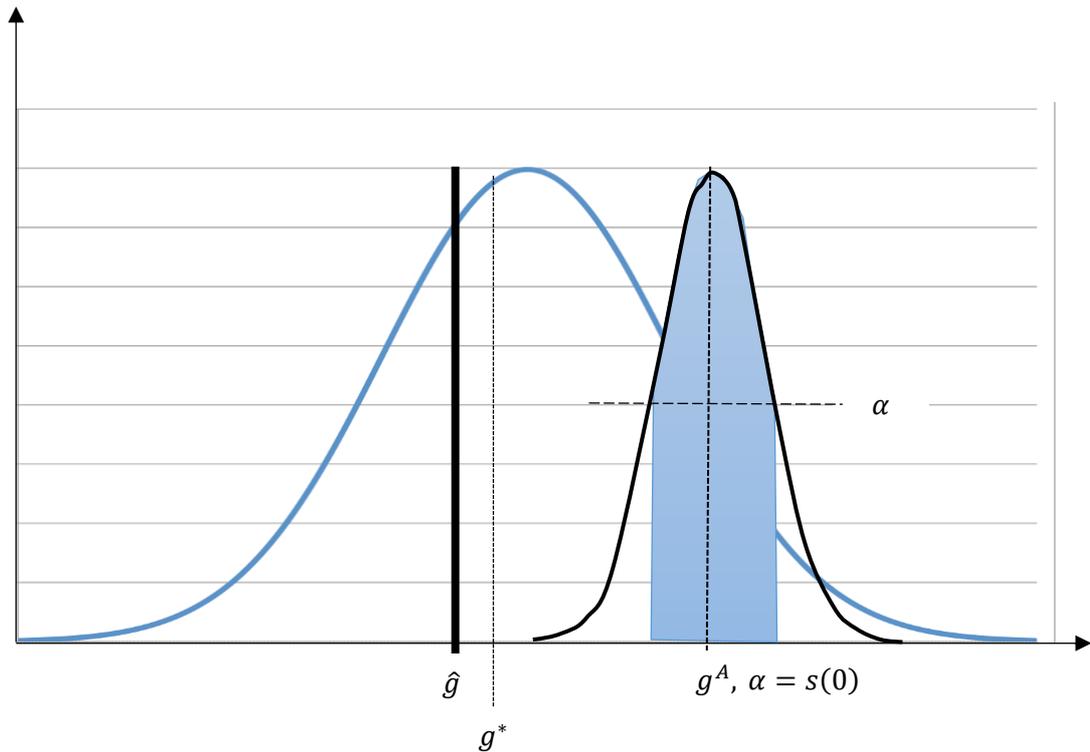
Figure 2. Incentives for doing a CBA in the presence of a governmental budget constraint.

In a situation like the one depicted in Figure 2 the civil servants always have an incentive to conduct a CBA if a CBA can influence the budget constraint. It is then in the bureaucrats' interests to demonstrate to the budget-setter that the public good is of more value to the citizens than its present level of supply.

6. Discussion and conclusions

We set out to study why a CBA is most often not made by civil servants engaged in environmental, energy and climate change policy-making in Sweden, while it is routinely used in choosing transport infrastructure projects and in determining the prices and subsidies paid for medicines. Taking a goal level of policy, which exceeds the socially optimal level of public good provision, as given, and combining it with fixed wages, we show that bureaucrats will self-select to work at a governmental agency. Those

bureaucrats whose professional norms lie close to the goal level of public good provision earn economic rents, while the marginal civil servant earns their reservation wage. Bureaucrats with more deviating preferences compared to the marginal civil servant are uninterested in staying employed by the agency because of the high search, cognitive adjustment and cognitive dissonance costs, and they quit.

We also show how the goal level of public good provision may well be quite stable. This is because of three impacts. The first arises because of the cognitive adjustment which is assumed to take place. Over time, the marginal civil servant's professional norm will approach the goal level, given that they have not decided to quit first. Secondly, the agency's promotion policy may well support a stable equilibrium policy level. Finally, however, because of the distribution of preferences in the general public, and because the bureaucrats are drawn from this population, the likelihood of employing a marginal civil servant closer to the population mean is higher than the probability of employing somebody with more deviant professional norms. This exerts an influence on the goal level of public good provision over time, to move in the direction of the mean policy, i.e., towards the point with the highest density of the public's distribution of preferences for public good provision. The mean policy may or may not be equal to the socially optimal policy, depending on the cost of the policy. Nevertheless, the civil servants at no time have any incentives to do a CBA.

Finally, we show that in the presence of a governmental budget constraint, the civil servants at the governmental agency have an incentive to conduct a CBA given that their preferences for the level of public good provision exceed the level imposed by the budget constraint. This may explain the use of CBA in areas such as transport infrastructure and prices and subsidies paid for medicines, which have direct negative budgetary consequences. In environmental, energy and climate change policy the costs are most often borne by the citizens and private companies. A CBA would make these costs visible

to the civil servants (and/or the decision-makers), who however prefer conducting policy based on their professional norms (or ideology in the case of politicians) which correspond to the goal level of public good provision.

Our results relate to several of the observations made by Mouter (2016), which were discussed in Section 2.2. Thus, if the decision-makers' professional norms coincide with the goal policy level, they may well consider the process of forming an opinion a trivial one (Mouter's point 1). Similarly, such a decision-maker will likely exhibit a low level of trust in the CBA (Mouter's point 3), which contradicts both with their own professional norm and the goal level of policy, and will consequently contest the normative premises implicit in a CBA (Mouter's point 4) and see the explanatory power of a CBA as limited (Mouter's point 5). Finally, as demonstrated in Section 5, the social profitability of a policy is of a lesser concern when money is plentiful (Mouter's point 7).

The model in the present paper is based on a number of assumptions. The first is that a civil servant can have real authority, that is, that they can influence the agency's policy recommendations. That this is the case in Sweden is demonstrated, e.g., by Uba (2010), who show that the representation of governmental agencies (civil servants, experts) in governmental commissions is considerable (for Germany, see Faber et al., (2002), for the US, Berkowitz and Krause (2017)). Uba's conclusions apply for energy and environmental (climate) policy. The model in the present paper lacks in realism, however, in that it studies the incentives of single civil servants. In reality, public policy decisions are usually made by groups of people. Game-theoretic analyses might yield more insights, but are beyond the scope of the present paper. Moreover, we have assumed normally distributed preferences with regard to public good consumption. Assuming a different distribution of preferences might also yield additional insights. The form of the public good preference function is standard to the literature and does not drive the results because of some unusual assumptions, however.

Examples of the kinds of problems illuminated by the preset paper are given in the choice experiment study by Carlsson et al., (2011), in Eggert et al., (2016), and in Uba (2010). Carlsson et al., (2011) survey a random sample of Swedish citizens and a random sample of administrators working at the Swedish Environmental Protection Agency (SEPA) with regard to preferences towards two environmental quality objectives, a balanced marine environment and clean air. The authors asked the SEPA administrators to choose the alternatives they would recommend as a policy, while the citizens were asked to act as private persons. The study finds, among other, that SEPA administrators have a higher willingness to pay for five out of the seven attributes that questions were asked about, and that the difference may not only be significant but also substantial. The administrators motivate their choices with concerns for ecological sustainability. These findings corroborate those in Uba's study. She notes that despite the "Swedish corporatist traditions" and the weak representation of renewable energy producers, the Swedish renewable-energy policies can be characterized as "forerunner" and "pioneering". Her explanation of this is the significant presence of environmental interests among agents of the state, who dominate the process of policy assessment in the commissions of inquiry preceding policy decisions, i.e., that the members and experts who represent the ministries and state agencies often champion environmental interests, while the role of scientists (including economists) is quite limited.

Finally, Eggert et al., (2016) also study the civil servants at the SEPA and compare their preferences to those of the general public and members of a special interest group. They show, among others, that if the respondents are asked to answer one question as private citizens and another as administrators, the order in which the questions are posed influences the answers. We take this as preliminary evidence for the impact of cognitive dissonance, i.e., it is an attempt by the respondent to answer in a consistent manner (Johansson-Stenman & Svedsäter, 2008).

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