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### RATIONAL CROWD-PLEASING AND DEMOCRATIC ACCOUNTABILITY

Mathias Dewatripont and Paul Seabright

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**Mathias Dewatripont, Université Libre de Bruxelles and CEPR**  
**Paul Seabright, Toulouse School of Economics and CEPR**

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Centre for Economic Policy Research  
53–56 Gt Sutton St, London EC1V 0DG, UK  
Tel: (44 20) 7183 8801, Fax: (44 20) 7183 8820  
Email: [cepr@cepr.org](mailto:cepr@cepr.org), Website: [www.cepr.org](http://www.cepr.org)

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## **ABSTRACT**

### **Rational Crowd-Pleasing and Democratic Accountability**

Politicians frequently undertake projects whose budgetary costs are disproportionate to the benefits they create for the voters or shareholders those decision-makers represent. When they are not the result of simple random mistakes, such wasteful projects are often attributed to weak mechanisms of accountability, such as inadequate opportunities for voters to exercise oversight, or capture of the political governance mechanism by special interests. This paper argues instead that wasteful spending may be a by-product of the accountability of politicians to their voters, not a symptom of its weakness or absence. Specifically, we develop a model in which agents have to do two things: first, search for projects and secondly, screen them to decide which ones to fund. Funding projects that may be wasteful is a way for agents to signal their diligence, and principals who cannot observe project quality directly will rationally reward them for this provided the benefits of diligence exceed the expected costs of waste. We introduce mechanisms of value-for-money auditing and show how politicians and managers may publicly resist them while sometimes privately welcoming them; auditing may, however, weaken incentives for agents to exercise control of their own on project choices, since it now becomes less costly for them to signal diligence. We extend the model to show that the same politicians who are over-enthusiastic with respect to the funding of wasteful projects may also be too timid with respect to what we call "divisive" projects, namely those that impose localized costs even if they create generalized benefits; many economic reform policies have this character. We discuss implications for the auditing of public spending projects, and for controls on public expenditure such as those embodied in the European Union state aid rules, the subsidy provisions of the World Trade Organization, or the conditionality of loans from the World Bank and other international organizations. We also discuss analogies with corporate governance.

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Mathias Dewatripont  
ECARES  
Universite Libre de Bruxelles  
50 Avenue F.D. Roosevelt  
B-1050 Brussels  
BELGIUM

Email: [mdewat@ulb.ac.be](mailto:mdewat@ulb.ac.be)

For further Discussion Papers by this author see:  
[www.cepr.org/pubs/new-dps/dplist.asp?authorid=104808](http://www.cepr.org/pubs/new-dps/dplist.asp?authorid=104808)

Paul Seabright  
Institut d'Economie Industrielle  
Université de Toulouse-1  
Manufacture de Tabacs  
21, Allée de Brienne  
31000 Toulouse  
FRANCE

Email: [seabrigh@cict.fr](mailto:seabrigh@cict.fr)

For further Discussion Papers by this author see:  
[www.cepr.org/pubs/new-dps/dplist.asp?authorid=108588](http://www.cepr.org/pubs/new-dps/dplist.asp?authorid=108588)

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# 1 Introduction

This paper is about how democratic pressures on politicians can lead them to be simultaneously hyper-active and weak, determined to prove themselves by continually launching shiny new initiatives while simultaneously being unwilling to take difficult decisions that involve standing up to powerful vested interests. This is a charge that has been levelled at many leading politicians, including France's President Sarkozy, who has been described as "more hyper-active than hyper-effective"<sup>1</sup>; Britain's Tony Blair, described as "legislatively hyperactive" because his government introduced an average of seven new laws per day during its ten years in power<sup>2</sup>; and America's President Obama, who has been described as "trying to do all four years in the first four months"<sup>3</sup>. While this is sometimes discussed as a trait of personality, the more thoughtful commentators who make this charge generally consider it the result at least in part of the pressures of democratic politics. But if voters in a democracy are interested in results, why should democratic politics have this effect? In this paper we explain why. We call the phenomenon "crowd-pleasing", show how it can involve doing too much of what is not worth doing and too little of what would be worth doing, and explain why voters do not have to be considered irrational because they reward politicians for behaving in this way. The crowd is pleased when a politician is active, but it is displeased when he makes any of them pay a visible price; what we show is that this is not psychopathology but the result of rational decision-making under uncertainty.

We begin by explaining the hyper-activity. In politics as in business, certain powerful individuals make frequent and important decisions about how to spend other people's money. They manage budgets, finding uses for the funds and deciding between competing uses for those funds. It is often claimed that this process results in decisions to spend money on projects whose cost is disproportionate to the benefits they create for those on whose behalf the money is being spent. If this is true, the question arises why it happens: why do politicians spend too much rather than spend too little? Most models of this process assume that politicians derive unspecified private benefits from spending, and that their spending too much is therefore a simple consequence of their being subject to insufficient accountability by the voters whose interests they are supposed to serve, just as workers who derive private benefits from idleness are shown in standard principal-agent models to exert too little effort. The implication is that increased accountability can be expected to reduce wasteful spending.

In this paper we propose a different view. Wasteful spending, we suggest, may not be the result of too little accountability but rather a more or less unavoidable

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<sup>1</sup>see <http://jda34.unblog.fr/2009/01/09/villepin-voit-en-sarkozy-un-president-plus-hyper-actif-que-hyper-efficace/>

The Economist magazine has also frequently used the term "hyperactive" to describe President Sarkozy, and headlines such as "Running fast but where is he going?" have made it clear this is not an alloyed compliment (August 30th 2007).

<sup>2</sup>*The Daily Telegraph*, 4th June 2007, see <http://www.tennessean.com/article/20090321/NEWS08/903210346/-1/RSS05>

<sup>3</sup><http://www.tennessean.com/article/20090321/NEWS08/903210346/-1/RSS05>

by-product of the very accountability that is proposed as the solution to the problem. Politicians spend money not because, left to their own devices, they would face an irresistible urge to waste other people's money but rather because, being under pressure to deliver "results", they deliver instead projects that, while not results as such, are statistically correlated with them. We show that this arises from two simple facts about the situation faced by most modern politicians and managers: first, as well as choosing between alternative uses for their budgetary resources they have to search for productive spending projects in the first place, and they are under pressure to demonstrate their motivation and competence at both tasks simultaneously. Secondly, these individuals are typically motivated by "career concerns", which means they gain substantial rents from staying in their jobs, and therefore from demonstrating their value to those who elect them. While in itself this is no bad thing, and may be better than for individuals to have no career concerns at all, it also entails risks: when those who elect such people frequently have only limited opportunities to elect better alternative individuals, the strategies adopted by the politicians to make themselves indispensable to their voters may not be the strategies that perfectly advance those voters' interests.

We develop these simple ideas in a model that links excess spending with the second type of behavior discussed above, one that may at first sight seem very different, even incompatible: timidity in the face of controversial political decisions. We link these phenomena via the idea that both types of political behavior arise from a need to "please the crowd" in order to ensure re-election. "Crowd-pleasing", we suggest, is spending to please the crowd while avoiding controversial but efficient policies that might offend someone in the crowd. Each type of behavior, while entailing foreseeable inefficiencies, can be rational both for politicians and for the crowd, since they can be statistically correlated with a characteristic in politicians that, on average, really benefits voters.

The characteristic of politicians that voters care about in our model is the extent to which the politicians care about the benefits created for voters by public projects. We suppose that all politicians care about these benefits to some extent (we do not speculate about whether this is due to altruism or to some other cause), but some politicians care more than others (cynics might prefer to rephrase that as "some politicians care even less than others"). But politicians have to undertake (at least) two kinds of task: they must choose between available projects, but they must also search for potential projects in the first place. In general it seems appropriate to think of politicians as having to manage a complex problem of allocating their attention to many projects of varying potential, whose probability of success depends *inter alia* on how much attention the politician can devote to them. In a more general version of our model developed in section 6, we consider politicians as having to choose between two types of available project of known quality (known to the politicians, that is), while simultaneously searching for alternative projects that are better than either but whose availability depends on the politicians' allocation of effort. However, in the basic version in section 2 we set out an even simpler problem that is enough to explain the fundamental mechanism at work. A politician can

always opt for a project whose benefits, while positive, do not cover its costs, or she can exert effort to find a better project. She has to evaluate the results of her search for better projects, but if, after searching, she has not found a good enough project to implement, she has no way to convince voters that this was not due to a lack of effort on her part, and therefore to a lack of concern for their welfare. A lack of discrimination in deciding which projects to implement is therefore a by-product of the need to convince voters of a politician's concern.

We are not, of course, the first to suggest that the actions of politicians may be due to their responding to pressures from others rather than simply pursuing their own aims. A large literature on "government failure" provides explanations for inefficient public spending decisions largely in terms of the "capture" of politicians or bureaucrats by special interest groups. These may be groups that use their lobbying powers to divert public spending towards their own particular goals (as in Coate & Morris, 1995 or in Maskin & Tirole 2006), or they may simply be median voters or other such beneficiaries of the logic of the electoral system, as in Lizzeri & Persico's (2001) model or that of Robinson & Torvik (2005)<sup>4</sup>. They may be regions whose political representatives can construct winning coalitions to distribute national budgets for their own disproportionate benefit (Seabright, 1996; Lockwood, 2002; Besley & Coate, 2003). Alternatively they may be firms in imperfectly competitive markets that benefit from rent-shifting international externalities, as in the literature on strategic trade policy initiated by Brander and Spencer (1985). In all of these frameworks, inefficient spending is a symptom of weak democratic accountability in the sense that not all interest groups are properly represented in the policy-making process. The proposed solutions vary but they usually consist in some strengthening of democratic accountability to ensure that spending more faithfully reflects the interests of the taxpayer/citizen at large; this may involve action at an international level to internalize externalities (see Besley & Seabright 1999). Our model, in contrast, does not rely on inefficient diversion of resources from the pocket of the general taxpayer into the pockets of specific lucky recipients, but rather explores an incentive for a representative taxpayer knowingly to accept the risk of financing inefficient projects as an unavoidable by-product of a mechanism for providing incentives for politicians to exert socially productive effort on behalf of citizens. It is, in some sense, a model of "hyperactivity" generated as a by-product of incentives for activity.

The model can generate such results because it assumes that politicians have career concerns - specifically, a desire for re-appointment or re-election - that can be both a source of beneficial motivation and at times in incentive to "do too much". There is a large literature on career concerns in the context of incentives for managers to exert effort (see Holmstrom, 1999) and a smaller but important

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<sup>4</sup>Which interest groups benefit can result from the strategic choice of parties, as in Carrillo & Castanheira (2008). The authors show how a decision by political parties to focus on ideological positions that differ from those of the median voter can be a rational means for them to commit to investing in the "quality" of their platforms. The inefficiencies of such interest group politics can also limit the proliferation of political parties, as shown by Lizzeri & Persico (2005).

literature on their impact in the context of incentives to display expertise (see Holmstrom and Ricart i Costa, 1986; Dasgupta and Prat, 2006). A number of papers have also looked at the effect of career concerns on politicians' behavior. See in particular Rogoff and Siebert (1988), Persson and Tabellini (2000) and Besley (2006) for discussions of the disciplining effects of career concerns on politicians. These authors have also stressed (albeit in different contexts than in our model) some potential negative effects of career concerns; for instance, these can exacerbate a politician's incentive to raise distortive taxes in order to finance public goods that improve her standing in the eyes of voters. Maskin & Tirole (2004), in a somewhat different setting from ours, model politicians who may "pander" to the concerns of an uninformed electorate, and who need to be reined in by a better-informed judiciary. In our model the electorate is rational, and rewards spending projects that are a signal of politicians' diligence, even though voters are aware that diligent politicians may sometimes propose projects that are inefficient; the reason is that a politician who has sought diligently for a project but then decided not to fund it because it is inefficient, has no way to differentiate herself from a politician who has not sought diligently at all.

We do not in this paper seek to demonstrate empirically that wasteful spending is an important phenomenon, and the evidence that it is remains controversial. We discuss in section 7 below the empirical evidence in the context of corporate governance; the evidence in political contexts is suggestive but even more controversial. We focus here on evidence from spending on industrial projects since these are easier to assess on value-for-money grounds than are many instances of spending on classic public goods. Some of this evidence is nevertheless frankly anecdotal: expensive prestige projects such as Concorde, or the well-publicized state support to struggling firms such as Crédit Lyonnais, Alstom, and MG Rover, or the quadriennial scramble to host the Olympic Games<sup>5</sup>. Recent examples include the rush in favour of specific biofuels or solar technologies which had been trumpeted as "decisive ways to combat climate change" only to be abandoned pretty quickly afterwards for being highly problematic or inefficient ways to address this challenge.

Although strongly suggestive, such evidence is hard to evaluate. One more systematic kind of evidence strengthens the case for systematic wasteful spending by politicians: econometric evidence which indicates that politicians and public officials tend to favor projects in relatively high-technology sectors, whether or not these are suitable for the comparative advantage of the location in question. A study by Midelfart-Knarvik and Overman (2002) showed that both

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<sup>5</sup>Rose and Spiegel (2009) claim that countries that have hosted the Olympic Games show a 30% increase in trade compared to otherwise similar countries. However, they also report a similar effect for countries that bid unsuccessfully to host the Games. It is therefore likely that this effect is the result not of the Games but of some unobserved characteristics that are signaled by bidding to host the Games. Rose and Spiegel also claim that the doubts of economists about such events "are rarely shared by policy makers". Their view is belied by a secret report to the UK government, as leaked in *The Times* on 2nd December 2008, which warned ministers that bidding to host the Games had a very weak economic justification. See <http://www.timesonline.co.uk/tol/sport/olympics/article5270391.ece>



national state aids and EU regional aid often failed to attract targeted industries to a significant degree because they did not take comparative advantage into account (e.g., whether there was enough skilled labor in the workforce). Citizens therefore often failed to benefit from agglomeration economies. A second bias is that politicians frequently ignore the impact of one project on others. A study by Algan et al. (2002) showed that such impacts can be large: public employment can reduce private employment through general equilibrium effects. The biennial report of the German Monopolkommission (2003) also discusses these harmful interproject effects at some length. And the study by Midelfart-Knarvik and Overman just cited suggests one route by which this could occur: subsidized projects could bid up the price of a scarce resource like skilled labor, making it less available for other firms.

Overall, it seems highly plausible that political processes driven by the desire for politicians to gain favorable press coverage may lead to spending decisions that incur costs that are out of proportion to the resulting economic benefits. A state aids case approved a few years ago by the European Commission provides an interesting illustration.<sup>6</sup> The Portuguese government approved aid worth €41,5 million (at 2000 prices) to the semiconductor firm Infineon in order to establish a plant manufacturing DRAM memory chips in Portugal. According to the firm's own estimates (plausibly erring on the optimistic side) the investment will generate 252 new jobs and safeguard 596 existing ones—a total of 848 at a cost of some €49,000 per job. Yet a study by Haskel et al. (2002) estimates that foreign direct investment generates productivity spillovers worth around €3,500 per job per year, so the project would have to continue for 25 years just to pay for itself—even discounting the possibility that Infineon's spillovers are lower than estimated (since there are no other DRAM manufacturers in Portugal). Does it really seem likely that Portugal's politicians are getting value for money? If not, then what is prompting them to spend money in this way?

An important feature to note about not only the Portuguese semiconductor project but also about many other large spending projects such as the Olympic games is that the politicians who sponsor them are typically keen to obtain maximum press coverage for their activities. If the explanation for their actions were a form of "capture" one would expect them to be as discreet about their actions as possible, courting publicity perhaps in the local press in the neighbourhood where the spending benefits are concentrated but keeping as quiet as possible in the national media that might alert taxpayers to what is happening. In fact most politicians appear keen to obtain both national and local press coverage and seem to believe that the more is known about their sponsorship of such spending projects the better for them. Our model suggests that the politicians may be right to believe this.

The paper is structured as follows. In section 2 we set out our basic model and show that a single representative voter may rationally reward with reelection a politician who funds a project that the voter knows will with positive

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<sup>6</sup>See the Commission decision at <http://europa.eu.int/eur-lex/lex/LexUriServ/LexUriServ.do?uri=OJ:L:2005:120:0005:0020:FR:PDF>

probability be inefficient (that is, will cost more than the benefits it generates). This inefficiency is asymmetric (our agent never fails to fund a project that generates benefits greater than its costs) and is therefore not simply due to "noise". In section 3 we discuss the kinds of incentives that political institutions can introduce to modify the risks of wasteful spending. Specifically, we introduce the possibility of independent audit mechanisms, which may encompass the activities of such diverse institutions as the Office of the Budget as in the US, the control of state aids in the European union, and the Audit Commission in the United Kingdom. We show how politicians may publicly resist such scrutiny while sometimes privately welcoming it; auditing tends, however, to weaken incentives for agents to search diligently for good projects, and to exercise control of their own on expenditures. Our model has the implication that for the audit mechanism to block a project always gives a boost to the agent's probability of re-appointment as it signals her diligence, an implication that is sometimes realistic but not always. So in section 4 we modify the basic framework to allow for the possibility that agents may also differ in their level of judgment, and blocking of their projects may signal their faulty judgment to the principal. In section 5 we extend the model to allow for a more complex space of possible projects, which allows us to show how project auditing can affect the kinds of projects that agents are willing at the margin to fund. Section 6 then extends the model to the case of multiple constituencies and allows for the possibility of politicians who are "captured" in the sense that they care only about some of these constituencies but are unconcerned about others. This has the striking consequence that politicians may be discouraged from undertaking certain projects that we call "divisive" - namely, they are efficient but impose costs on a subset of the constituencies. For fear of looking like captured politicians, other, non-captured politicians avoid undertaking certain efficient projects. Thus our model is able to simultaneously explain hyperactivity (excessive spending) as well as timidity in the face of hard political choices, using the same underlying mechanism, namely a desire by politicians to signal their type through the choice of policies that are correlated with the more electorally attractive types.

Section 7 of the paper briefly discusses the analogy with corporate governance, while Section 8 summarizes and concludes.

## 2 The model

There is a project which has a cost  $c$  and generates a value  $v \in \{\underline{v}, \bar{v}\}$ , which is observed by the politician but not by the voters. Voters are risk neutral and care about  $v - c$ . (We ignore issues about the shadow cost of public funds;  $c$  can be considered as including this). In the first-best outcome, therefore, the project should go ahead iff  $v \geq c$ , and to make the problem interesting we assume that  $\bar{v} > c > \underline{v}$ .

However, the decision as to the future of the project is made by a politician, whose interests are not the same as those of the voters. We represent the politician's choice by  $a \in \{0, 1\}$ , with  $a = 1$  meaning that the project is funded.

Politicians are assumed to care less about the benefits generated by the projects than voters do, but there is uncertainty about how much they care, i.e. there is adverse selection. Specifically, we assume that the politician cares about  $\alpha v$ , with  $\alpha \in \{\underline{\alpha}, \bar{\alpha}\}$  with probability  $p$  that  $\alpha = \bar{\alpha}$  and probability  $(1 - p)$  that  $\alpha = \underline{\alpha}$ , and  $0 < \underline{\alpha} < \bar{\alpha} < 1$ . Only the politician knows  $\alpha$ . In principle the  $\bar{\alpha}$ -type is the "better" politician from the point of view of the voters, though as we show below this involves a subtle trade-off between moral hazard and adverse selection considerations. We call  $\alpha$  the politician's degree of "concern" for the interests of voters, and politicians with higher  $\alpha$  are the more concerned types.

The moral hazard arises because the politician has to invest (at a cost) to find a good project. Let the probability that the politician finds a project with  $v = \bar{v}$  be  $i \in (0, 1)$  where  $i$  is her investment level, which costs her  $\psi(i)$ , which is increasing and convex in  $i$ .

We also assume that all politicians care about re-election, which yields them a rent  $B$ .

The timing of the model is as follows:

At Stage 0: Nature chooses  $\alpha$ , which is privately learnt by the politician.

At Stage 1: The politician chooses  $i$ , then privately learns  $v$ .

At Stage 2: The politician chooses  $a$ , i.e. whether to fund the project or not. This is observed by voters.

At Stage 3: The voters decide whether to re-elect the politician or not. For simplicity, we assume that the re-election probability is zero if voters think the politician is 'worse than average' and an exogenous positive probability  $r$  otherwise. Since random events affect re-election probabilities,  $r$  can be strictly lower than 1, but one can also assume it equals 1.

Note that at this point we do not allow for the possibility of auditing, but this is introduced below.

Since the project generates returns too late to be verified in advance of the election, the re-election probability is affected simply according to whether or not the project has been funded. Our goal is to construct an equilibrium where, if the project has been funded, the politician is re-elected with probability  $r$  while, if it has not been funded, the re-election probability is zero. In this candidate equilibrium, the politician's problem is as follows:

$$\text{Max}_i \{i(\alpha\bar{v} + Br - c) + (1 - i) \max[\alpha\underline{v} + Br - c, 0] - \psi(i)\}. \quad (1)$$

This program incorporates the assumption that if  $v = \bar{v}$ , the politician gains more from funding the project than from not funding it,<sup>7</sup> which yields her 0 (no benefit, no cost, zero re-election probability). However, we make no assumption about whether funding is preferable to not funding in the case where  $v = \underline{v}$ .

To make the problem interesting, we make the following explicit assumption in order to investigate the possibility that politicians may "overbid" for projects:

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<sup>7</sup>Otherwise, the problem would be trivial.

$$\bar{\alpha}\bar{v} + Br > \min[\underline{\alpha}\bar{v} + Br, \bar{\alpha}\underline{v} + Br] \geq c > \underline{\alpha}\underline{v} + Br. \quad (2)$$

This implies that a relatively "unconcerned" politician - one of type  $\underline{\alpha}$  - takes actions that are ex-post efficient, while a "concerned" politician - one of type  $\bar{\alpha}$  - overfunds due to re-election concerns, in the sense that she funds the low-value project and not just the high-value project. Nevertheless, voters may still rationally prefer to re-elect the type  $\bar{\alpha}$  politician even in the knowledge that she will overfund. The reason is that she will exert more effort than the unconcerned politician, and the value of this effort may outweigh the efficiency cost of overfunding.

Given assumption (2), we can re-write (1) for the concerned politician as:

$$Max_i \{i(\bar{\alpha}\bar{v} + Br - c) + (1 - i)(\bar{\alpha}\underline{v} + Br - c) - \psi(i)\} \quad (3)$$

which yields the first-order condition for effort  $\bar{\alpha}(\bar{v} - \underline{v}) = \psi'(i)$ .

For the unconcerned politician we can re-write (1) as:

$$Max_i \{i(\underline{\alpha}\bar{v} + Br - c) - \psi(i)\} \quad (4)$$

which yields the first-order condition for effort  $\underline{\alpha}\bar{v} + Br - c = \psi'(i)$ .

Writing  $\bar{i}$  and  $\underline{i}$  for the utility-maximizing choices of effort for the concerned and unconcerned politician respectively, it is straightforward to show that  $\bar{i} > \underline{i}$ . To see this, note that  $\bar{\alpha}(\bar{v} - \underline{v}) > \underline{\alpha}(\bar{v} - \underline{v}) = (\underline{\alpha}\bar{v} + Br - c) - (\underline{\alpha}\underline{v} + Br - c) > (\underline{\alpha}\bar{v} + Br - c)$ , where the last inequality follows from assumption (2).

Since voters do not internalize the effort cost of the politician, they strictly prefer more effort to less. This will outweigh the less efficient funding choices of the concerned politician, and therefore lead them to tend to re-elect a politician who funds a project (thereby rationalizing our candidate equilibrium) because that leads to an upward revision of the probability that she is the concerned type, iff:

$$(\bar{i}\bar{v} + (1 - \bar{i})\underline{v} - c) > (\underline{i}(\bar{v} - c)) \quad (5)$$

where the left-hand side represents the voter's gain with the high- $\alpha$  type, and the right-hand side represents her gain with the low- $\alpha$  type. This condition will hold iff the expected gain from the higher probability of a good project outweighs the expected loss from overfunding by an over-zealous politician, namely iff:

$$(\bar{i} - \underline{i})(\bar{v} - c) - (1 - \bar{i})(c - \underline{v}) > 0. \quad (6)$$

The expression on the left hand side is increasing in  $\bar{i}$  and  $(\bar{v} - c)$  and decreasing in  $\underline{i}$  and  $(c - \underline{v})$ . Given the first order conditions for  $\bar{i}$  and  $\underline{i}$ , this allows us to state the following result (from Dewatripont & Seabright, 2006):

**Proposition 1** *Assume that condition (2) holds, namely that concerned politicians overfund projects. Then, voters will tend to favor (resp. not to favor) the re-election of politicians who fund projects (resp. who do not), even though*

they are aware of concerned politician overfunding, provided that (a) the degree of concern of concerned politicians is sufficiently high relative to that of unconcerned politicians, and (b) the net value of good projects is sufficiently high relative to the net cost of bad projects.

### 3 An audit mechanism

Let us now introduce auditing of public spending projects by an independent mechanism, such as an Office of the Budget or a State Aid regulator. Such a mechanism will not only stop some projects but also provide a "signal about  $v$ " and therefore about the politician's type. The simplest modification of the model would be the exogenous assumption that funding a project with value  $\bar{v}$  could lead to an additional re-election probability  $\bar{r}$ , while funding a project with value  $\underline{v}$  could lead to an additional re-election probability  $\underline{r}$ , with  $\bar{r} > \underline{r}$ .<sup>8</sup>

A more interesting extension would endogenize reelection probabilities, based on an explicit formulation of the auditor's (say a European commissioner or DG-Competition) decision. To do this, suppose that the auditor examining all funded projects must undertake effort to obtain verifiable information that would allow him to block the project. However, such information is not perfect, and may sometimes lead to the blocking of a project that should have been approved. Specifically, assume that a project with low value  $\underline{v}$  has a probability  $e$  of being blocked while a project with high value  $\bar{v}$  has a probability  $\gamma e$  of being blocked. One can think of  $\gamma < 1$  as the relative risk of a project's succumbing to "friendly fire", where  $e$  can be the result of an optimization problem by the auditor.<sup>9</sup>

<sup>8</sup>The concerned politician now solves:

$$\text{Max}_i \{i(\bar{\alpha}\bar{v} + B\bar{r} - c) + (1 - i) \max[\bar{\alpha}\underline{v} + B\underline{r} - c, 0] - \psi(i)\}. \quad (7)$$

Here the policy has two effects. First, it raises incentives to invest. Secondly, it may stop the funding of bad projects, if  $\bar{\alpha}\underline{v} + Br - c > 0 > \bar{\alpha}\bar{v} + B\underline{r} - c$ . Interestingly, the first effect is positive even if the second is not - that is, even if the audit never stops any bad projects. This is because, by making the funding of bad projects produce less attractive outcomes for the politician, it induces the politician to work harder to improve project quality.

The unconcerned politician solves:

$$\text{Max}_i \{i(\bar{v} + B\bar{r} - c) - \psi(i)\}. \quad (8)$$

Here only the first effect described above operates (the increased incentives to invest). Finally, note that even if the audit stops overfunding by the concerned politician, the reelection rule is still rational since a good project is more likely to come from a concerned (and hence high-investment) politician.

<sup>9</sup>For example, one could think of the auditor gaining a (reputational) benefit  $b$  if he blocks a project, and nothing if he approves it. However, the auditor has to decide on his effort level  $e$  (which has a cost  $\phi(e)$ , increasing and convex) before knowing anything about the quality of the project. Writing  $\rho$  for the probability that a project is a good one, the auditor therefore solves:

$$\text{Max}_e \{[\rho\gamma e + (1 - \rho)e]b - \phi(e)\} \quad (9)$$

which yields first order condition  $b(\rho\gamma + (1 - \rho)) = \phi'(e)$ .

In order to simplify the analysis, we restrict effort choices for politicians to only two values,  $\bar{i}$  and  $\underline{i}$ , which now become parameters. We assume that exerting the higher  $\bar{i}$  relative to  $\underline{i}$  requires cost  $\psi$  for the politician, and we look for equilibria where the politician of type  $\bar{\alpha}$  chooses effort  $\bar{i}$  while the politician of type  $\underline{\alpha}$  chooses  $\underline{i}$ .

An interesting parameter is  $\rho$ , the probability that the funded project is of high quality  $\bar{v}$ . Note that, prior to the funding decision, the probability of high-quality projects is  $(p\bar{i} + (1-p)\underline{i})$ , and conversely the probability of low-quality projects is  $(p(1-\bar{i}) + (1-p)(1-\underline{i}))$ . Of these projects, only those found by concerned politicians are funded. So, conditional on being funded, the probability that the project is of high quality is:

$$\rho = \frac{p\bar{i} + (1-p)\underline{i}}{p(1-\bar{i}) + p\bar{i} + (1-p)\underline{i}} = \frac{p\bar{i} + (1-p)\underline{i}}{p + (1-p)\underline{i}} = 1 - \frac{p(1-\bar{i})}{p + (1-p)\underline{i}} \quad (10)$$

which is increasing in both  $\bar{i}$  and  $\underline{i}$ , and decreasing in  $p$  (provided, of course, that condition (2) holds). Paradoxically, therefore, although the probability that a funded project is of high quality is increasing in politicians' effort (which is what concerned politicians are good at delivering), it is decreasing in the proportion of politicians who are good, since concerned politicians are indiscriminating in the projects they decide to fund.

From the point of view of the voter, the advantage of auditing consists in the bad projects funded by concerned politicians but stopped by the auditor, while the disadvantage of auditing consists in the good projects, funded by politicians of either type, and stopped by the auditor. Once again, assume that the voter does not care about the auditor's utility but only about the resulting probabilities,  $e$  and  $\gamma e$ . So the voter will be better off under auditing iff:

$$(1 - \rho) e (c - \underline{v}) - \rho \gamma e (\bar{v} - c) > 0 \quad (11)$$

which yields:

$$(1 - \rho) (c - \underline{v}) - \rho \gamma (\bar{v} - c) > 0. \quad (12)$$

Note that this is more likely to hold if the following circumstances hold (in addition, once again, to condition (2)): (i)  $\rho$  is low (so more bad projects get funded); (ii)  $(c - \underline{v})$  is low, so bad projects are costly; (iii)  $\gamma (\bar{v} - c)$  is low, so that good projects - which risk being stopped erroneously - are either not too valuable or not too much in danger of being stopped.

Note that (i) implies that, provided the conditions for overbidding by concerned politicians hold, the voters are more likely to benefit from auditing if there is a high proportion of concerned politicians selecting projects for funding!

Our candidate equilibrium is thus as follows: the concerned politician should want to choose high effort level  $\bar{i}$  and try and undertake whatever project she identified, and the unconcerned politician should want to choose low effort level

$\underline{i}$  and try and undertake only good projects. Moreover, the voters should want to re-elect with probability  $r$  politicians who undertake projects, whether they get blocked or not.

Let us deal first with voters, assuming indeed we are on this candidate equilibrium path. There are two issues to consider: (i) do voters want to re-elect concerned politicians? And (ii) do they want to re-elect 'activist' politicians, whether their project has been blocked or not?

As far as (i) is concerned, if we maintain our earlier assumption in Section 2 in favor of concerned politicians, namely:

$$(\bar{i}\bar{v} + (1 - \bar{i})\underline{v} - c) > (\underline{i}(\bar{v} - c)),$$

then it is easy to show that auditing reinforces the idea that concerned politicians should be re-elected<sup>10</sup> This is because auditing mostly stops wastful projects, which are the ones put forward by concerned politicians.

This implies (ii) also, that is the re-election of activist politicians, because activism raises the probability of facing of a concerned politician above the prior probability  $p$ , whether the project has been blocked or not.<sup>11</sup>

Let us now turn to the incentives of politicians. First, what about funding decisions? Note that, since a concerned politician dislikes bad projects ( $\bar{\alpha}\underline{v} - c < 0$ ) and since auditing blocks them with some probability, the concerned politician will never be less likely to try and fund the bad project as a result of auditing: for the concerned politician, being re-elected while not having to undertake a bad project is the best possible outcome! Here, we immediately have the interesting idea that the concerned politician 'quietly welcomes' the blocking decision, something one often hears about complaints by politicians towards international organisations.

Turning now to unconcerned politicians, note that blocking decisions also reduce the cost for them of trying to fund bad projects. Specifically, for  $e$  sufficiently high, she might prefer to try and fund the bad project after all. She thereby manages to be re-elected while avoiding with a high probability to have to pay for the consequences of her decision. To avoid this case we assume therefore that it is sufficiently difficult for the auditor to obtain blocking evidence that auditing does not encourage unconcerned politicians to fund bad projects, or:

$$(1 - e)(\underline{\alpha}\underline{v} - c) + Br < 0. \tag{13}$$

<sup>10</sup>Indeed,  $\bar{i}\bar{v} + (1 - \bar{i})\underline{v} - c > \underline{i}(\bar{v} - c)$  implies  $\bar{i}(1 - \gamma e)(\bar{v} - c) + (1 - \bar{i})(1 - e)(\underline{v} - c) > \underline{i}(1 - \gamma e)(\bar{v} - c)$ .

<sup>11</sup>Indeed, if the project has been blocked, the probability of facing a concerned politician becomes:

$$p(\bar{i}\gamma e + (1 - \bar{i})e) / [p(\bar{i}\gamma e + (1 - \bar{i})e) + (1 - p)\underline{i}\gamma e]$$

which is higher than  $p$ . And if the project has not been blocked, the probability of facing a concerned politician becomes:

$$p(\bar{i}(1 - \gamma e) + (1 - \bar{i})(1 - e)) / [p(\bar{i}\gamma e + (1 - \bar{i})e) + (1 - p)\underline{i}(1 - \gamma e)]$$

which is also higher than  $p$ .

This condition means that auditing should not be too efficient, otherwise funding a bad project stops being a credible signal of the politician's type.

Finally, let us turn to politicians' effort incentives. We look for an equilibrium where the concerned politician chooses investment level  $\bar{i}$  (at cost  $\psi$ ) and the unconcerned politician chooses investment level  $\underline{i}$  (at zero cost). Given the continuation equilibrium, this requires:

$$\begin{aligned} & \bar{i}(Br + (1 - \gamma e)(\bar{\alpha v} - c)) + (1 - \bar{i})(Br + (1 - e)(\bar{\alpha v} - c)) - \psi \\ & \geq \underline{i}(Br + (1 - \gamma e)(\bar{\alpha v} - c)) + (1 - \underline{i})(Br + (1 - e)(\bar{\alpha v} - c)) \end{aligned} \quad (14)$$

as well as:

$$\bar{i}(Br + (1 - \gamma e)(\underline{\alpha v} - c)) - \psi \leq \underline{i}(Br + (1 - \gamma e)(\underline{\alpha v} - c)). \quad (15)$$

We start from the assumption that these conditions are satisfied without auditing (namely when  $e = 0$ ), that is, we place ourselves in the condition of Section 2. Assuming  $\underline{\alpha v} < c$ , a rise in auditing intensity  $e$  will make the condition for the unconcerned politician harder to satisfy: if the unconcerned politician prefers being elected without undertaking the good project, then she is happier being blocked and this raises her incentive to exert effort. We assume however this effect is not strong enough to start inducing her to expend  $\psi$ . If instead the unconcerned politician were to prefer implementing a good project (i.e.  $\underline{\alpha v} > c$ ), auditing would reduce incentives to undertake effort, making low effort even more attractive than without auditing.

As for the concerned politician, one can show that auditing unambiguously reduces her incentive to exert effort, because the overriding implication is that auditing reduces the probability of having to undertake a bad project.<sup>12</sup>

While we see that auditing could prevent an equilibrium where the concerned politician chooses investment level  $\bar{i}$  and the unconcerned politician chooses investment level  $\underline{i}$ , we exclude this case by assuming that (14) and (15) are satisfied. Then, we can summarize the results of this section in the following proposition:

**Proposition 2** *Under conditions (2), (13), (14) and (15), in equilibrium:*

- *the concerned politician exerts high effort and tries and funds all projects, the unconcerned politician exerts low effort and only tries and funds good projects, and voters re-elect activist politicians whether their project has been blocked or not;*
- *the concerned politician welcomes the blocking of his bad project;*

<sup>12</sup>One can rewrite the condition for the concerned politician to exert effort as:

$$(\bar{i} - \underline{i}) [(1 - \gamma e)(\bar{\alpha v} - c) - (1 - e)(\bar{\alpha v} - c)] \geq \psi,$$

and the LHS goes down when  $e$  goes up because  $\bar{\alpha v} - c < 0$  and  $\bar{\alpha v} - c < \underline{\alpha v} - c$ .



- *auditing weakens the incentives for effort by the concerned politician while it weakens or strengthens the incentives for effort by the unconcerned politician.*

## 4 Weak effort or bad judgment?

Until now, since only concerned politicians propose bad projects, and since blocking is more likely to happen to bad projects than to good ones, a blocking decision could only increase the ex post probability that the politician is of the concerned type. We now introduce the possibility that it may also signal something bad about politicians, namely that they have bad judgment. To do this we assume that an unconcerned politician, with probability  $\beta$ , may wrongly believe that a project is good when it is in fact bad. Thus the blocking of the project signals that the project's sponsor might have been a concerned (if over-enthusiastic) type, but might also have been an unconcerned type with poor judgment. We also simplify by assuming  $\gamma = 0$  (nothing important turns on this but it makes the algebra more transparent) and we keep restricting effort choices for politicians to only two values,  $\bar{i}$  and  $\underline{i}$  and we keep looking for equilibria where the politician of type  $\bar{\alpha}$  chooses effort  $\bar{i}$  while the politician of type  $\underline{\alpha}$  chooses  $\underline{i}$ .

Since politicians are re-elected if the probability that they are the concerned type, conditional on their observed actions, is greater than  $p$ , the unconditional frequency of good types in the population, it is straightforward to show that any politician who funds a project that is not blocked by the auditor will be re-elected, namely that  $\Pr[\text{Concerned} \mid \text{NotBlocked}] > p$ . This follows from the fact that: (i) concerned politicians identify more good projects, which are funded and unblocked for sure; and (ii) they are more willing than unconcerned politicians to fund bad projects, which are unblocked with positive probability.<sup>13</sup>

However, what about projects that are funded but blocked? Can the positive signal of their being funded be outweighed by the negative signal of their being blocked? For it to be the case that a blocked project is a bad signal it must happen that  $\Pr[\text{Concerned} \mid \text{Blocked}] < \Pr[\text{Concerned} \mid \text{NotBlocked}]$ , which is larger than  $p$ . Instead,  $\Pr[\text{Concerned} \mid \text{Blocked}]$  may be smaller than or greater than  $p$  according to whether the positive signal of a politician's funding the project is outweighed or not by the negative signal of the project's being blocked. We start here with the case where  $\Pr[\text{Concerned} \mid \text{Blocked}] < p$ , since the other one is more similar to what was discussed in the previous Section (we just comment on it at the end of this Section).

The inequality  $\Pr[\text{Concerned} \mid \text{Blocked}] < p$  can be rewritten as:

$$\frac{p(1 - \bar{i})e}{p(1 - \bar{i})e + (1 - p)(1 - \underline{i})\beta e} < p$$

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<sup>13</sup>Namely, one can easily verify that:  $\frac{p\bar{i} + p(1 - \bar{i})(1 - e)}{p\bar{i} + p(1 - \bar{i})(1 - e) + (1 - p)\underline{i} + (1 - p)(1 - \underline{i})\beta(1 - e)} > p$ .

which implies:

$$\frac{p(1-\bar{i})e}{(1-p)(1-\underline{i})\beta e} < \frac{p}{1-p}$$

or:

$$\beta > \frac{1-\bar{i}}{1-\underline{i}}.$$

This has an intuitive interpretation: the probability of an unconcerned politician's making a bad judgment about the project must be greater than the ratio of the number of bad projects funded by concerned politicians relative to those funded by unconcerned politicians. This requires the concerned politician to choose effort  $\bar{i}$  and the bad one to choose effort  $\underline{i}$ . Given that in this case reelection happens iff the project is funded and not blocked, the concerned politician (who starts all projects, good and bad) will prefer effort  $\bar{i}$  iff:

$$\begin{aligned} & \bar{i}(\bar{\alpha}\bar{v} - c + Br) + (1-\bar{i})(1-e)(\bar{\alpha}\underline{v} - c + Br) - \psi \\ & > \underline{i}(\bar{\alpha}\bar{v} - c + Br) + (1-\underline{i})(1-e)(\bar{\alpha}\underline{v} - c + Br). \end{aligned}$$

Similarly, the unconcerned politician (who only starts projects she believes to be good) will prefer effort  $\underline{i}$  iff:

$$\begin{aligned} & \bar{i}(\underline{\alpha}\bar{v} - c + Br) + (1-\bar{i})\beta(1-e)(\underline{\alpha}\underline{v} - c + Br) - \psi \\ & < \underline{i}(\underline{\alpha}\bar{v} - c + Br) + (1-\underline{i})\beta(1-e)(\underline{\alpha}\underline{v} - c + Br). \end{aligned}$$

Taken together, these two conditions can be rewritten as:

$$\begin{aligned} & \bar{\alpha}\bar{v} - c + Br - (1-e)(\bar{\alpha}\underline{v} - c + Br) \\ & > \frac{\psi}{\bar{i}-\underline{i}} > \underline{\alpha}\bar{v} - c + Br - \beta(1-e)(\underline{\alpha}\underline{v} - c + Br). \end{aligned} \quad (16)$$

It is easy to show that the set of  $\psi$ 's that satisfy these conditions is non-empty.<sup>14</sup>

We finally, have to make sure both politicians are happy to make their respective funding choices. Since we have assumed that  $\underline{\alpha}\bar{v} - c + Br > 0$ , the concerned politician is clearly happy to undertake all projects. Having moreover assumed that  $\underline{\alpha}\underline{v} - c + Br < 0$  means that the unconcerned politician does not want to fund projects she knows are bad. What we need to assume is that

<sup>14</sup>Indeed, since  $\underline{\alpha}\underline{v} - c + Br < 0$ , we have that:

$$\underline{\alpha}\bar{v} - c + Br - \beta(1-e)(\underline{\alpha}\underline{v} - c + Br) < \underline{\alpha}\bar{v} - c + Br - (1-e)(\underline{\alpha}\underline{v} - c + Br)$$

and moreover:

$$\bar{\alpha}\bar{v} - c + Br - (1-e)(\bar{\alpha}\underline{v} - c + Br) > \underline{\alpha}\bar{v} - c + Br - (1-e)(\underline{\alpha}\underline{v} - c + Br)$$

is equivalent to:

$$\bar{v} > (1-e)\underline{v},$$

which is clearly true, and the more so the higher is  $e$ .

the unconcerned politician decides to fund projects she thinks are good but is aware may be bad, which requires:

$$\underline{i}(\underline{\alpha}\bar{v} - c + Br) + (1 - \underline{i})\beta(1 - e)(\underline{\alpha}v - c + Br) > 0 \quad (17)$$

We thus have the following result:

**Proposition 3** *Assume  $\beta(1 - \underline{i}) > (1 - \bar{i})$ . Under conditions (16) and (17), in equilibrium:*

- *the concerned politician exerts high effort and tries and funds all projects while the unconcerned politician exerts low effort and only funds good projects;*
- *politicians get re-elected if and only if they undertake projects which are not blocked;*
- *only unconcerned politicians are happy to be blocked;*
- *a more efficient auditing system, that is, a higher  $e$ , makes it more (resp. less) attractive for the concerned (resp. unconcerned) politician to choose high effort.*

The intuition for politicians' attitudes towards audits is that: (i) being blocked means not being re-elected, which reduces the concerned politician's payoff; (ii) being blocked may also mean realizing one was trying to fund a bad project, which makes an unconcerned politician happy the project is not going through. This explains the impact of more efficient audits on incentives to exert effort, since exerting effort reduces the probability of ending up undertaking a bad project, an outcome which is: (i) even more unattractive for the concerned politician when it is blocked; and (ii) in contrast, less unattractive for the unconcerned politician when it is blocked.

Let us now turn to the case where  $\Pr[\text{Concerned} \mid \text{Blocked}] > p$ . From the previous discussion, we know this means:

$$\beta < \frac{1 - \bar{i}}{1 - \underline{i}}.$$

This is the case where being blocked does not prevent re-election. It is similar to the previous section. The difference is that being blocked is still a signal on one's quality, with two subcases, depending on whether  $\Pr[\text{Concerned} \mid \text{NotBlocked}]$  is lower or higher than  $\Pr[\text{Concerned} \mid \text{Blocked}]$ .<sup>15</sup> Both subcases are very

<sup>15</sup>It is easy to show that these two subcases correspond to  $\beta$  higher or lower than:

$$\frac{(1 - \bar{i})\underline{i}}{(1 - \underline{i})\bar{i}},$$

a bound which is itself lower than:

$$\frac{1 - \bar{i}}{1 - \underline{i}}.$$

similar. As in Section 3, one can look for conditions for an equilibrium where the concerned politician chooses effort  $\bar{i}$  and the unconcerned one chooses effort  $\underline{i}$ . As in the previous case, it can be checked that the set of  $\psi$ 's that satisfy these conditions is nonempty.<sup>16</sup> Moreover, under these conditions, both politicians are happy to be blocked: They avoid having to have to undertake a costly project while still being re-elected (concerned politicians knew the project was costly, unconcerned ones discover this fact). This is true whether being blocked is a bad or good signal per se. This also implies, by continuity, that both types of politicians would be happy to be blocked even if this slightly reduced the chances of re-election. Finally, more efficient audits reduce politicians' effort incentives: Getting re-elected requires undertaking a project, which entails a cost  $c - \alpha\underline{v}$  if the project is bad, and exerting effort helps reduce the probability of finding a bad project; audits however allow for re-election while saving on this cost  $c - \alpha\underline{v}$ , thereby making low effort less costly for politicians.

## 5 A Continuum of Projects

In this section we come back to the model of section 2 and relax the assumption that projects come in just two qualities,  $\underline{v}$  and  $\bar{v}$ : we instead suppose that they are distributed along a continuum, which allows us to look at the effect of auditing on the kinds of projects that are approved by politicians, by examing what happens to the threshold for approval. Specifically, assume that, conditional on the politician's choice of effort  $i$ , projects are uniformly distributed with an expected value that is a linear function of  $i$ , with a mean of  $\underline{v}$  when  $i = 0$  and a mean of  $\bar{v}$  when  $i = 1$ , and a support (conditional on  $i$ ) of length  $\bar{v} - \underline{v}$ . This

<sup>16</sup>In this equilibrium, we need the concerned politician to prefer effort  $\bar{i}$ , or:

$$\begin{aligned} & \bar{i}(\bar{\alpha}\bar{v} - c) + (1 - \bar{i})(1 - e)(\bar{\alpha}\underline{v} - c) + Br - \psi \\ & > \underline{i}(\bar{\alpha}\bar{v} - c) + (1 - \underline{i})(1 - e)\bar{\alpha}\underline{v} - c + Br. \end{aligned}$$

Similarly, the unconcerned politician has to prefer effort  $\underline{i}$ , or:

$$\begin{aligned} & \bar{i}(\underline{\alpha}\bar{v} - c + Br) + (1 - \bar{i})\beta[(1 - e)(\underline{\alpha}\underline{v} - c) + Br] - \psi \\ & < \underline{i}(\underline{\alpha}\bar{v} - c + Br) + (1 - \underline{i})\beta[(1 - e)(\underline{\alpha}\underline{v} - c) + Br]. \end{aligned}$$

Taken together, this implies:

$$\begin{aligned} & \bar{\alpha}\bar{v} - c - (1 - e)(\bar{\alpha}\underline{v} - c) \\ & > \frac{\psi}{\bar{i} - \underline{i}} > \underline{\alpha}\bar{v} - c + Br - \beta[(1 - e)(\underline{\alpha}\underline{v} - c) + Br]. \end{aligned} \quad (18)$$

Finally, we have to make sure both politicians are happy to make their respective funding choices. For the bad politician, this first means assuming the unconcerned politician decides to fund projects she thinks are good but is aware may be bad, or:

$$\underline{i}(\underline{\alpha}\bar{v} - c + Br) + (1 - \underline{i})\beta[(1 - e)\underline{\alpha}\underline{v} - c) + Br] > 0 \quad (19)$$

Second, we have to assume that unconcerned politicians do not start projects they know are bad, which could happen if bad projects are blocked often enough, all this without compromising reelection. This requires condition (13).

implies that we can write the expectation of  $v$  given  $i$  as:

$$E(v | i) = \underline{v} + i(\bar{v} - \underline{v}), \quad (20)$$

the conditional support as:

$$\left( E(v | i) - \frac{(\bar{v} - \underline{v})}{2}, E(v | i) + \frac{(\bar{v} - \underline{v})}{2} \right) \quad (21)$$

and the conditional probability that  $v$  exceeds some threshold  $t$  as:

$$\Pr(v > t | i) = \frac{1}{2} + i - \frac{(t - \underline{v})}{(\bar{v} - \underline{v})}.$$

In this framework we need to re-define the probability that a project will be blocked by the auditor (which in the two-state case was  $e$  for  $v = \underline{v}$  and  $\gamma e$  for  $v = \bar{v}$ ). The simplest blocking rule which yields something analogous to the two-state rule as a special case gives the probability that a project of value  $v$  is blocked as:

$$\Pr(\text{blocked} | v) = e \left( 1 - (1 - \gamma) \frac{\left( v - \left( \underline{v} - \frac{(\bar{v} - \underline{v})}{2} \right) \right)}{2(\bar{v} - \underline{v})} \right). \quad (22)$$

Note that the unconditional support of  $v$  is the interval  $\left[ \underline{v} - \frac{(\bar{v} - \underline{v})}{2}, \bar{v} + \frac{(\bar{v} - \underline{v})}{2} \right]$ , so this rule yields a blocking probability of  $e$  for the lowest observable project value, which is not  $\underline{v}$  but  $\underline{v} - \frac{(\bar{v} - \underline{v})}{2}$ , and a blocking probability of  $\gamma e$  for the highest observable project value which is not  $\bar{v}$  but  $\bar{v} + \frac{(\bar{v} - \underline{v})}{2}$ .

Let us concentrate here on analyzing the impact of auditing on the incentives for both types of politician to approve projects of various qualities. If blocking has no impact on re-election probabilities, a politician of type  $\alpha$  will approve a project of value  $v$  iff:

$$(1 - \Pr(\text{blocked} | v))(\alpha v - c) + Br \geq 0$$

Substituting equation (22) and defining  $v^*$  as the threshold value that sets the inequality equal to zero yields:

$$G(e, \alpha, v^*) \equiv \left( 1 - e \left( 1 - (1 - \gamma) \frac{\left( v^* - \left( \underline{v} - \frac{(\bar{v} - \underline{v})}{2} \right) \right)}{2(\bar{v} - \underline{v})} \right) \right) (\alpha v^* - c) + Br = 0.$$

Note first that, for both high and low values of  $\alpha$ , both roots of this equation must have values of  $v^*$  at which  $(\alpha v^* - c) < 0$  - that is, both types of politicians must "over-fund", supporting at least some projects that have negative social value. Of the two roots, only the higher one makes sense - that is, the root at which  $\frac{dG(e, \alpha, v^*)}{dv^*} > 0$ . At the lower root politicians prefer lower-quality projects

as they are sufficiently more likely to be rejected that this offsets their lower quality. We therefore examine the comparative statics of the higher root.

We can use this equation to determine how the threshold  $v^*$  varies with  $e$ , the effort invested by the auditor. Taking the derivative of  $G(e, \alpha, v^*)$  with respect to  $v^*$  yields:

$$\begin{aligned} \frac{dG(e, \alpha, v^*)}{dv^*} &= \alpha \left( 1 - e \left( 1 - (1 - \gamma) \frac{\left( v^* - \left( \underline{v} - \frac{(\bar{v} - \underline{v})}{2} \right) \right)}{2(\bar{v} - \underline{v})} \right) \right) \\ &\quad + \frac{e(1 - \gamma)(\alpha v^* - c)}{2(\bar{v} - \underline{v})}. \end{aligned}$$

The first term in this derivative is strictly positive, while the second term is negative since, as just mentioned,  $(\alpha v^* - c) < 0$ . However, we know for the reasons just given that at the threshold value the first term will outweigh the second (the politician would not fund projects of at least value  $v^*$  but rather projects of at most value  $v^*$ ). Thus we can conclude that  $G(e, \alpha, v^*)$  is increasing in  $v^*$ .

Taking the derivative of  $G(e, \alpha, v^*)$  with respect to  $e$  :

$$\frac{dG(e, \alpha, v^*)}{de} = - \left( 1 - (1 - \gamma) \frac{\left( v^* - \left( \underline{v} - \frac{(\bar{v} - \underline{v})}{2} \right) \right)}{2(\bar{v} - \underline{v})} \right) (\alpha v^* - c) > 0$$

from which we conclude that  $v^*(e)$  is decreasing in  $e$ . This means that the more effective is auditing, the worse will be the projects that politicians are, at the margin, willing to fund.

We can now compare the value of  $v^*$  for different types of politician. First, as expected from the earlier analysis,  $G(e, \alpha, v^*)$  is increasing in  $\alpha$ , so  $v^*$  is decreasing in  $\alpha$ , meaning that the "better" the politician's type, the worse are the marginal projects she is willing to fund. Secondly,  $\frac{d^2 G(e, \alpha, v^*)}{de d\alpha} < 0$  while  $\frac{d^2 G(e, \alpha, v^*)}{dv^* d\alpha} > 0$ , so that for high values of  $\alpha$ , increases in  $e$  cause a smaller deterioration in the marginal projects that are funded.

We can summarize this result in the following proposition:

**Proposition 4** *Assume that projects are distributed as a function of the politician's effort with conditional mean and support given by conditions (20) and (21) respectively, and the probability that a project is blocked by the auditor is given by condition (22). Then the more effective is auditing (the higher is  $e$ ), the lower the quality of the projects politicians of both types are willing to fund at the margin. The unconcerned politician, who is the more selective in the absence of the control mechanism, is the one whose marginal projects fall most in value as a result of the auditor's presence.*

## 6 An Extension to Multiple Constituencies

Assume now that instead of a representative voter we have three voter constituencies (with equal weights in the population),  $j = 1, 2, 3$ . In every other respect, we return to the conditions of the baseline, no-audit, model of section 2.

The politician may have different attitudes towards different constituencies. Denote by  $\alpha_j$  the politician's degree of concern for constituency  $j$ . In addition to the two polar cases of concerned and unconcerned politicians, we allow for politicians with a high degree of concern for some constituencies but not for others. Specifically, we define: (i) an unconcerned politician as one for whom  $\alpha_j = \underline{\alpha}$  for all  $j$ ; (ii) a concerned politician as one for whom  $\alpha_j = \bar{\alpha}$  for all  $j$ ; and (iii) a politician "captured by constituency  $j$ " as one for whom  $\alpha_j = \bar{\alpha}$  and  $\alpha_k = \underline{\alpha}$  for all  $k \neq j$ .

The proportions of each type of politician in the population are as follow:  $p$  for concerned politicians,  $q$  for captured politicians (with equal probabilities of being captured by each of the three constituencies), and  $1-p-q$  for unconcerned politicians.

What matters now are not only aggregate project benefits but also their distribution among constituencies. Specifically, we consider the following projects:

1. A good project yields a total benefit  $\bar{v}$  divided equally among each of the constituencies 1, 2, 3.
2. A bad project yields a total benefit  $\underline{v}$  divided equally among each of the constituencies 1, 2, 3.
3. A "divisive" project yields a benefit  $\bar{v}$  to two constituencies but only  $\bar{v} - \phi < 0$  to a third constituency. Call a project "divisive at the expense of  $j$ " if the cost  $\phi$  is borne by constituency  $j$ . Note that divisive projects can be efficient if  $\bar{v} - \phi/3 > c$ .

Assume that bad and divisive projects always exist. Instead, as in the baseline model, good projects only exist with probability  $i$ , where  $i$  is the politician's investment level.

We now suppose that when the politician decides whether to fund a project, two things are observed: first, the fact that the project is funded or not; and second, if funded, whether the project is divisive or not, and if so, at which constituency's expense.

Note that this second assumption about observability is reasonable even if voters cannot tell the difference between a good or a bad project. It makes sense that voters might be unable to tell whether positive benefits to them are large or small, but still be able to tell the difference between a project that generates a benefit and a project that generates no benefits at all and just imposes significant costs (think for example of public-sector pension reform).

We focus on a candidate equilibrium where politicians are re-elected if and only if a nondivisive project is funded. In such a candidate equilibrium, when

a good project is identified, it will be chosen by all types of politicians. The interesting case concerns what happens when no good project is identified. Each type of politician then has three choices: (i) do not fund any project; (ii) fund the bad project; or (iii) fund the divisive project. As in the baseline case, the concerned politician will go for the bad project (in order to get re-elected) and the unconcerned one will go for no project at all (which means no re-election) if we have respectively:

$$\bar{\alpha}v + Br - c \geq \max \{0, \bar{\alpha}(\bar{v} - \phi/3) - c\} \quad (23)$$

and:

$$0 \geq \max \{\underline{\alpha}v + Br - c, \underline{\alpha}(\bar{v} - \phi/3) - c\}. \quad (24)$$

Finally, the captured politician will go for a divisive project (which means no re-election) if:

$$\frac{1}{3}\bar{\alpha}v + \frac{1}{3}\underline{\alpha}(2\bar{v} - \phi) - c \geq \max \left\{ 0, \left( \frac{1}{3}\bar{\alpha} + \frac{2}{3}\underline{\alpha} \right) v + Br - c \right\}. \quad (25)$$

To understand more intuitively these conditions, consider the special case where  $\underline{\alpha} = 0$  and  $Br = c$ . In this case, the unconcerned politician is indifferent between the bad project and no project, while he would definitely not want to choose the divisive project. The good politician will go for the good project provided:

$$\bar{\alpha}v \geq \bar{\alpha}(\bar{v} - \phi/3) - c \quad (26)$$

while the captured politician will go for the divisive project provided:

$$\frac{1}{3}\bar{\alpha}v - c \geq \frac{1}{3}\bar{\alpha}v. \quad (27)$$

These two conditions are satisfied simultaneously iff:

$$\bar{\alpha}\phi/3 + c \geq \bar{\alpha}(\bar{v} - v) \geq 3c. \quad (28)$$

This means in particular that  $\phi$  has to be large enough: there must be a large cost to one of the constituencies which matter to the concerned politician but not to the captured one.

The above conditions concern ex-post choices. Concerning ex-ante effort, there is no change in comparison to the baseline case for the concerned and the unconcerned politicians, since the divisive project is never attractive to them. Therefore we have the same  $\bar{i}$  and  $\underline{i}$  as in section 2, with  $\bar{i} > \underline{i}$ . As for the captured politician, her effort is lower than  $\bar{i}$ , since: (i) her average  $\alpha$  is in-between  $\bar{\alpha}$  and  $\underline{\alpha}$ ; and (ii) when the good project is not identified, she prefers the divisive project to the bad project.

What does this all imply for re-election decisions? In this candidate equilibrium, we want the choice of a nondivisive project to lead to re-election and the choice of a divisive project or of no project to lead to no re-election. Will that be the case? Yes, under the following conditions.



First, since a choice of no project being undertaken reveals an unconcerned politician, this leads to no re-election if we assume the conditions of Proposition 1.

Second, what if a divisive project has been chosen? Clearly, the constituency that has been hurt by the project choice, and which now knows the politician has  $\alpha_j = \underline{\alpha}$ , will not want to re-elect her. What about constituencies  $k \neq j$ ? Will they prefer a politician who is known to be captured but who has a 50% chance of being captured by them and a 50% chance of being captured by the other constituency? If they re-elect the politician, in case a good project is not identified, this leads to a 25% risk of facing next period a hurtful project (if the politician is captured by the other constituency and decides to undertake a project which does not hurt again constituency  $j$ ). Instead, if a brand new politician is elected, the probability of being hurt by a divisive project in the case a good project is not identified is  $q/3$  (i.e. the probability the politician is captured by another constituency times the probability that her choice of project hurts one's interest rather than the other constituency which has not captured the politician). So, the probability of losing  $\phi$  when no good project has been identified drops in the case of no re-election if:

$$\frac{q}{3} < \frac{1}{4} \tag{29}$$

So, if  $\phi$  is high enough, this condition will lead voters not to re-elect captured politicians. Moreover, remember these work less hard to identify good projects than concerned politicians, another reason not to re-elect them, at least if there are enough concerned politicians in the population (i.e.  $p$  is high enough).

Finally, if a nondivisive project is chosen, voters raise their probability assessment that they are facing a concerned politician (since she undertakes a nondivisive project with probability 1, while the other types of politicians do not if they have not identified a good project). Since voters prefer concerned politicians, they should re-elect those who choose nondivisive projects. Note however that the choice of a nondivisive project also leads voters to update the relative probabilities of facing a captured versus an unconcerned politician, and voters will typically not be indifferent between these two types of politicians. This effect will however be small if, for example, the proportion of unconcerned politicians,  $1 - p - q$ , is small (because then the effect which dominates is the fact that the choice of a nondivisive project raises the probability of facing a concerned politician).

So we now have a set-up in which, if there are enough concerned politicians in the population (i.e.  $p$  is high enough), only captured politicians will wish to undertake divisive projects. Concerned politicians will undertake good projects and bad projects but not divisive projects, even though they intrinsically value divisive projects more than bad projects. The reasons concerned politicians avoid funding divisive projects is that good projects guarantee a re-election probability  $r$  but divisive projects lead to no re-election, since voters rationally expect that politicians who fund divisive projects are captured.

Formally, we have obtained the following Proposition:

**Proposition 5** *Assume for simplicity that  $\underline{\alpha} = 0$  and  $Br = c$ . Moreover, assume that conditions (28) and (29) hold, and that  $\phi$  and  $p$  are high. Then, in equilibrium:*

- *the unconcerned politician funds only good projects (and is re-elected only when doing so);*
- *the concerned politician funds both good and bad projects but not divisive projects, and is always re-elected;*
- *the captured politician funds both good and divisive projects but not bad projects, and is re-elected only when funding good projects.*

We thus have a set-up in which electoral incentives both encourage some inefficient projects to be funded and discourage some potentially efficient projects from being funded. The latter feature is due to the fact that the efficient projects in question are divisive, i.e. they impose a significant cost on a minority of the population, albeit a cost that may be outweighed by aggregate benefits. Concerned politicians are discouraged from undertaking such projects because (although they may privately place a positive value on the project), they fear revealing themselves to be the kind of politician who is unconcerned about the cost to the constituency at whose expense the project takes place, which will jeopardize their re-election because the other constituencies are worried 'their turn could come next'.

## 7 An analogy with corporate governance

There is an evident analogy between the role played by politicians in managing resources on behalf of voters, and that played by corporate managers on behalf of shareholders. The literature on corporate governance often uses the term "empire building" to describe the analogous behavior by managers to that of politicians that we analyze in our model. There are also some evident points at which the analogy breaks down, which has made us cautious about interpreting the results of our model too literally in corporate governance terms. The most important point of disanalogy is that managers' relations with the shareholders of the company that employs them are often governed by highly formal contracts with substantial commitment power over time, even if elements of informal non-contractual incentives are also important in the relationship. Here we summarize briefly some relevant contributions to this literature.

The idea that governance mechanisms may be necessary to prevent managers pursuing their own agenda (central to the formal literature since Jensen and Meckling, 1976 and Jensen, 1986, but present in the sociological and management literature since Berle and Means, 1932) has given way in recent years to a more nuanced understanding that some types of governance mechanism may exacerbate some of the very problems they are designed to solve. Becht, Bolton and Roell (2005) provide a comprehensive overview. For instance, creditors can

rein in managerial discretion but the interests of creditors can often significantly diverge from those of shareholders. The interests of majority shareholders can likewise differ significantly from those of minorities, with consequences that legislative protection of minorities can only imperfectly regulate. Our approach differs, however, from the many models of such phenomena because we do not appeal to any difference in interests between subsets of principals.

The approach that is closest in spirit to ours is Dasgupta and Prat (2006), who show that investment managers may have incentives to "churn" - that is, to trade in financial assets even though the expected returns from doing so are negative - because it is the only way to signal that they have expertise (earlier papers modelling similar phenomena include Allen and Gorton, 1993; Dow and Gorton, 1997; Chevalier and Ellison, 1999). Chevalier and Ellison (1997) provide the best-known evidence of "churning" by investment managers.

It would be interesting to explore the connection between our political economics approach and the corporate governance context.

## 8 Conclusions

We have shown in this paper that public spending projects whose costs are disproportionate to their benefits to the economy may be a by-product of democratic accountability of politicians to voters, not a symptom of its weakness or absence. We have also shown that failing to undertake efficient but divisive projects may also be the outcome of the (rational) fear of the (rational) disapproval of the electorate. At the risk of stating the obvious, we should emphasize that there is no incompatibility between this argument and the claim that wasteful public spending, like the failure to adopt efficient projects, is often precisely a symptom of weak democratic accountability; many examples fit the latter model better than they fit our own. Nevertheless, there are features of some kinds of public spending projects that, we believe, fit our model better than a traditional "capture" story: notably, that politicians are keen to advertise their activities even when these may be accompanied by inefficiency, since no politician wants to it to be believed that she does not care. Jean-Claude Juncker, the Prime Minister of Luxembourg, once remarked to a journalist, after a European Council meeting that had failed to agree action on policies to tackle the EU's looming pensions problem, that "We all know what has to be done; there's no dispute about that. We just don't know how to get re-elected after we've done it"<sup>17</sup>. Promising to spend the voters' own money, even if unwisely, for fear of looking like the kind of politician who enjoys making spending cuts, is precisely the predicament of the politicians in our model, and often - we believe - of politicians in the real world. Similarly, we believe there are many examples of politicians who avoid policy reforms that improve efficiency at the expense of some constituencies, for fear of being considered captured by some interests and unconcerned about others. Exploring further both this predicament and ways of resolving it are promising avenues for future research.

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<sup>17</sup>Wolfgang Munchau, personal communication.

## 9 Bibliography

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