A Theory of Wasteful Public Spending

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Abstract

Public spending projects whose costs are disproportionate to their benefits to the economy are often attributed to weak mechanisms of political accountability, such as capture by special interests. This paper argues that wasteful spending may be a by-product of democratic accountability of politicians to voters, not a symptom of its weakness or absence. Specifically, we develop a model in which politicians fund projects that are wasteful as a way to signal their diligence, and voters rationally reward them for this. We introduce mechanisms of auditing and show how politicians may publicly resist them while sometimes privately welcoming them; auditing may, however, weaken incentives for politicians to exercise control of their own on public expenditures. We discuss implications for the role of auditing of public projects, and for controls on 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.

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1 Introduction

In this paper we explore the nature of democratic constraints upon politicians, and the extent to which this may lead them to spend excessive amounts on public projects relative to the benefits these generate for the economy. In the large literature on "government failure", explanations for inefficient public spending decisions focus largely on "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 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). 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 a weakness of democratic accountability, and the solution consists 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-election - that can be both a source of beneficial motivation and at times in incentive to "do too much". Clearly, our model is not the first one to look 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.

The evidence that governments often subsidize projects that do not maximize the welfare of their own jurisdictions comes from a variety of sources, which we can cover no more than superficially here. Some of this evidence is frankly anecdotal: expensive prestige projects such as Concorde, or the well-publicized state support to struggling firms such as Crédit Lyonnais, Alsthom, and MG Rover, or the quadriennial scramble to host the Olympic Games. Although strongly suggestive, such evidence is hard to evaluate. Does it represent more than the errors of judgment that frequently occur when industrial decisions are made, in the private and public sectors (as attested by private sector disasters like Vivendi Universal, Enron, and WorldCom)? Two more systematic kinds of evidence strengthen the case. First, there is econometric evidence 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 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 last 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.

The second kind of systematic evidence comes from recent studies showing the importance in industrial productivity growth of entry and exit of firms, precisely the processes that government subsidies to private firms tend to slow down—since these subsidies generally go to established firms rather than new entrants, and are hard to curtail if the projects fail. For instance, Hobijn and Jovanovic (2001) have shown not only that the US stock market recovery of the 1980s and 1990s was driven almost entirely by new firms, but also that incumbent firms of the early 1970s that did not take over or merge with new firms had still not recovered their market value relative to US GDP even by the end of the 1990s. Disney et.al. (2003) showed that half the growth of labor productivity in U.K. manufacturing 1980–92 was due not to internal growth of plants but instead to selection (the replacement of low-productivity plants by high-productivity plants). Moreover, 80-90% of total factor productivity growth was attributable to selection.¹

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 recent case approved by the European Commission provides an interesting illustration.² 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

¹See also Aghion and Howitt (2005) on the positive effect of exit of firms on economic growth.
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 voters may rationally reward politicians who fund public projects that the voters know on average will contain some inefficient projects. In section 3 we introduce the possibility of an audit mechanism, such as an Office of the Budget as in the US, or a state aids law as in the European union, or an Audit Commission as in the United Kingdom. We show how politicians may publicly resist them while sometimes privately welcoming them; auditing tends, however, weaken incentives for politicians to search diligently for good projects, and to exercise control of their own on public expenditures. Our model has the implication that blocking a project always gives an electoral boost to a politician as it signals her diligence, which is sometimes realistic but not always. So in section 4 we modify the basic framework to allow for the possibility that politicians may also differ in their level of judgment, and blocking of their projects may signal their faulty judgment to the electorate. 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 politicians are willing at the margin to fund. Section 6 concludes.

2 The model

There is a project which has a cost $c$ and generates a value $v \in \{v, \overline{v}\}$, which is observed by the politician and may or may not be observed 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 $\overline{v} > c > v$.

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 care less about the benefits generated by the projects than voters do, but there is uncertainty about how much they care, which raises the possibility of adverse selection. Specifically, we assume that the politician cares about $\alpha v$, 

\[ \alpha \in (0, 1) \]
with $\alpha \in \{\alpha_1, \alpha_2\}$ with probability $p$ that $\alpha = \alpha_2$ and probability $(1 - p)$ that $\alpha = \alpha_1$ and $0 < \alpha_1 < \alpha_2 < 1$. Only the politician knows $\alpha$. In principle the $\alpha_2$-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 $v = \alpha_i$ 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 $\alpha$.
- At Stage 1: The politician chooses $i$, then learns $v$.
- At Stage 2: The politician decides whether to fund the project or not, choosing $a$.
- At Stage 3: The voters decide whether to re-elect the politician or not.

This is without allowing for the possibility of auditing, which is introduced below.

Since the project generates returns too late to be verified in advance of the election, the re-election decision is taken simply according to whether or not the project is funded. We assume for now that if the project is funded the politician is re-elected with a probability $r$, while if it is not funded she is not re-elected (more on this below).

So the politician’s problem is as follows:

$$\max_i \{i(\alpha \alpha_2 + Br - c) + (1 - i) \max[\alpha \alpha_2 + Br - c, 0] - \psi(i)\}$$  \hspace{1cm} (1)

This program incorporates the assumption that if $v = \alpha_1$, the politician gains more from funding the project than from not funding it, which yields her 0 (no benefit, no cost, no re-election). However, we make no assumption about whether funding is preferable to not funding in the case where $v = \alpha_2$.

We make the following explicit assumption in order to investigate the possibility that politicians may "overbid" for projects:

$$\alpha \alpha_2 + Br > \min\{\alpha \alpha_1 + Br, \alpha \alpha_2 + Br\} \geq c > \alpha \alpha_2 + Br$$  \hspace{1cm} (2)
This implies that a relatively "unconcerned" politician - one of type $\alpha$ - takes actions that are ex-post efficient, while a "concerned" politician - one of type $\overline{\alpha}$ - 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 $\overline{\alpha}$ 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:

$$\max_i \{ i (\alpha v + Br - c) + (1 - i) (\overline{\alpha} v + Br - c) - \psi(i) \}$$

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

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

$$\max_i \{ i (\alpha v + Br - c) - \psi(i) \}$$

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

Writing $\overline{\gamma}$ and $\gamma$ for the utility-maximizing choices of effort for the concerned and unconcerned politician respectively, it is straightforward to show that $\overline{\gamma} > \gamma$. To see this, note that $\overline{\alpha} (v - \overline{\alpha}) > \alpha (v - \overline{\alpha}) = (\alpha v + Br - c) - (\overline{\alpha} v + Br - c) > (\overline{\alpha} v + Br - c)$, 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 reward a politician who reveals herself with greater probability to be the concerned type, iff

$$(\overline{\gamma} v + (1 - \overline{\gamma}) \overline{\alpha} - c) > (\gamma (v - c))$$

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:

$$(\overline{\gamma} - \gamma) (v - c) - (1 - \overline{\gamma}) (c - v) > 0$$

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

**Proposition 1** Assume condition 2. Then, faced with a choice between re-electing a politician with probability $r$ and refusing with probability $1$ to re-elect, voters will re-elect politicians who fund projects and refuse to re-elect politicians who do not (even though they know that concerned politicians will fund bad projects as well as good ones), provided that a) the degree of concern of concerned politicians is sufficiently high relative to that of unconcerned politicians, and b) that the net value of good projects is sufficiently high relative to the net cost of bad projects.

### 3 An audit mechanism

There are various ways to think about how auditing of public spending projects by an independent mechanism, such as an Office of the Budget or a State Aid regulator might influence outcomes in this model. One simple way would be to think of the audit as providing a "signal about $v$". For instance, funding a project with value $\bar{v}$ could lead to a re-election probability $\bar{r}$, while funding a project with value $\underline{v}$ could lead to a re-election probability $\underline{r}$ with $\bar{r} > \underline{r}$. The concerned politician now solves:

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

Here the policy has two effects. First, it raises incentives to invest. Secondly, it may stop the funding of bad projects, if $\alpha \bar{v} + B\bar{r} - c > 0 > \alpha \underline{v} + B\underline{r} - c$. 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:

\[
\max_i \{ i (\alpha \bar{v} + B\bar{r} - c) - \psi(i) \} \quad (8)
\]

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 re-election rule is still rational since a good project is more likely to come from a concerned (and hence high-investment) politician.

An alternative way to think about auditing would be to model explicitly the incentives of the agent (say a European commissioner or DG-Competition) making the decision. We adopt a similar framework. We suppose that all funded projects are examined by an agent - call this agent the "auditor". The auditor must undertake some effort \( e \) 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 a project that should have been approved. The effort has a cost \( \phi(e) \), also increasing and convex. An effort \( e \) yields a probability \( e \) of obtaining blocking information if the project had low value \( \nu \), and probability \( \gamma e \) if the project has high value \( \nu \), where \( \gamma < 1 \) is the relative risk of a project’s succumbing to "friendly fire". The auditor gains a benefit \( b \) if he blocks a project, and nothing if he approves it. However, the auditor has to decide on his effort level 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:

\[
Max_e \left\{ [\rho \gamma e + (1 - \rho) e] b - \phi(e) \right\} 
\]

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

To solve for \( \rho \), note that, prior to the funding decision, there is a probability \( (\bar{\eta} + (1 - \bar{\eta}) \bar{i}) \) that the project is high quality, and conversely a probability \( (\eta (1 - \bar{\eta}) + (1 - \eta) (1 - \bar{i})) \) that the project is low quality. Of the low quality projects, only those found by concerned politicians are funded. So, conditional on being funded, the probability that the project is of high quality is

\[
\rho = \frac{\bar{\eta} + (1 - \bar{\eta}) \bar{i}}{\bar{\eta} + \bar{\eta} + (1 - \bar{\eta}) \bar{i}} = \frac{\bar{\eta} + (1 - \bar{\eta}) \bar{i}}{\bar{\eta} + (1 - \bar{\eta}) \bar{i}} = 1 - \frac{\eta (1 - \bar{i})}{p + (1 - p) \bar{i}}
\]

which is increasing in both \( \bar{i} \) and \( \bar{\eta} \) 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 undiscriminating 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, the voter does not care about the auditor’s effort but only about the resulting probabilities, \( e \) and \( \gamma e \). So the voter will be better off under auditing iff:

\[
(1 - \rho) e (c - v) - \rho \gamma e (\pi - c) > 0
\]  

(11)

which yields

\[
(1 - \rho) (c - v) - \rho \gamma (\pi - c) > 0
\]  

(12)

Note that this is more likely to hold if the following circumstances hold (in addition, once again, to condition 2):

1) \( \rho \) is low (so more bad projects get funded),
2) \( (c - v) \) is low, so bad projects are costly.
3) \( \gamma (\pi - c) \) 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, again, 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!

However, we now have to consider the effect of auditing on the incentives of politicians at the stage of searching for projects and approving them. Two questions need to be considered. First, how does the prospect of auditing affect the politician’s effort decision? Secondly, how does it affect the decision whether or not to block projects - and in particular, does it turn politicians’ decisions into cheap talk?

Note first that the probability that a good project passes the auditor is \( 1 - \gamma e \), while the probability that a bad project passes is the lower value \( 1 - e \). We assume that the signal value of a decision to approve a project occurs whether or not the project is funded (i.e. it is a function of the politician’s decision, not of the eventual outcome), whereas the costs and benefits of the project itself will be occur only if the approved project actually passes the auditor’s scrutiny. We can therefore re-write equation 1 as follows

\[
\max_i \{ i (Br + (1 - \gamma e) (\alpha \pi - c)) + (1 - i) \max [Br + (1 - e) (\alpha v - c), 0] - \psi (i) \}
\]  

(13)
and note that for the concerned politician this yields, instead of equation 3:

$$\max_i \{ i(Br + (1 - \gamma e)(\overline{\alpha v} - c)) + (1 - i)(Br + (1 - e)(\overline{\alpha v} - c)) - \psi(i) \}$$

for which the first order condition is

$$\alpha [(\overline{v} - \overline{v}) + e(\overline{v} - \gamma \overline{v})] - ec(1 - \gamma) = \psi'(i),$$

which differs from the condition without auditing via the addition of the terms $$\overline{e}(\overline{v} - \gamma \overline{v}) - ec(1 - \gamma)$$. The latter expression can be rewritten as

$$e[(\overline{\alpha v} - c) - \gamma (\overline{v} - c)],$$

which is negative, showing that state aid control unambiguously weakens the incentive for the concerned politician to exert effort. The same is true for the unconcerned politician, whose first order condition is

$$\alpha \overline{v} + Br - c - \gamma e(\overline{\alpha v} - c) = \psi'(i).$$

This differs from the condition without auditing via the addition of the expression $$-\gamma e(\overline{\alpha v} - c)$$, which is also negative.

What about the politician’s incentives in the funding decision? Note that, since $$\overline{v} - c < 0$$ by assumption and therefore $$(1 - e)(\overline{\alpha v} - c)$$ is increasing in $$e$$, the concerned politician will never be less likely to fund the bad project as a result of auditing. However, by the same reasoning the unconcerned politician may, for sufficiently high, find that she prefers to fund the bad project after all. She gains the valuable signal for certain, but with a high probability she does not have to pay for the consequences of her decision - it has become “cheap talk”. Let $$\delta \equiv \frac{Br}{(c - \overline{\alpha v})}$$ be the ratio of the unconcerned politician’s gain from signalling to the amount by which she would suffer from the decision to fund a bad project that was actually implemented (this ratio is less than one by assumption). Then auditing will still leave the politician’s funding decision incentive compatible provided that $$e$$, the probability that the auditor blocks bad projects, is less than $$1 - \delta$$. This shows if auditing blocks bad projects for sure, politicians will lose all incentives to avoid funding them. The nature of the resulting equilibrium will depend sensitively on assumptions about out-of-equilibrium behaviour: if both concerned and unconcerned politicians fund bad projects, voters will presumably no longer be willing to re-elect with probability $$r$$ those who have funded projects since the probability that the politician funding them is the concerned type is no longer greater than $$p$$. The expected electoral rents from funding will therefore depend on the difference between the probability of re-election of a random politician and that of one who hypothetically refused to fund the project, which in equilibrium would never occur. Depending on the size of this rent, either all politicians would fund all projects or no politicians would fund any, neither of which is a particularly interesting case to study for the kinds of phenomena we have in mind. 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. We write this condition as
\[(1 - e)(\alpha v - c) + Br < 0\]  

(15)

We can summarize the results of this section in the following proposition:

**Proposition 2** Assume conditions 2 and 15. Then voters are more likely to be better off under a control system that blocks bad projects with probability \(e\) but has also a risk of erroneously blocking good projects, a) the more frequent and costly are bad projects in relation to good projects, and b) the less likely are good projects to be erroneously blocked. The control system weakens the incentives for effort by both concerned and unconcerned politicians.

### 4 Weak effort or bad judgment?

We now consider a framework in which the blocking of a project by the auditor may after all count as a negative signal about the politician’s type. Since under the existing framework only concerned politicians propose bad projects, and since blocking is more likely to happen to bad projects than to good ones, a blocking decision can 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 a 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, more importantly, by restricting effort choices for politicians to only two values, \(\tilde{7}\) and \(\tilde{i}\) which now become parameters. We assume that exerting the higher \(\tilde{7}\) relative to \(\tilde{i}\) requires cost \(\psi\) for the politician, and we shall look for equilibria where the politician of type \(\alpha\) chooses \(\tilde{7}\) while the politician of type \(\alpha\) chooses \(\tilde{i}\).

We assume in addition that 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 follows straightforwardly, from the fact that unconcerned types will not fund bad projects, that any politician who funds a project that is not blocked by the auditor will be re-elected. 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 \(\Pr[\text{Good} \mid \text{Blocked}] < \Pr[\text{Good} \mid \text{NotBlocked}]\). We have stressed that
Pr[Good | NotBlocked] > p, but Pr[Good | 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 consider these two cases in turn.

4.1 Case 1:
We write the inequality Pr[Good | Blocked] < p explicitly as:
\[
p(1 - \overline{e})e < p(1 - \overline{e})e + (1 - p)(1 - \overline{e}) \beta e
\]
from which it follows that:
\[
\frac{p(1 - \overline{e})e}{(1 - p)(1 - \overline{e}) \beta e} < \frac{p}{1 - p}
\]
and therefore that:
\[
\beta > \frac{1 - \overline{i}}{1 - \overline{i}}.
\]
This has an intuitive interpretation, which is that 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 to those funded by unconcerned politicians. This requires the concerned politician to choose effort \(\overline{e}\) and the bad one to choose effort \(\overline{i}\). Given that in this case reelection happens if and only if the project is funded and not blocked, the concerned politician (who starts all projects, good and bad) will prefer effort \(\overline{e}\) if and only if:
\[
\overline{e}(\overline{\alpha v} - c + Br) + (1 - \overline{e})(\overline{\alpha v} - c + Br) - \psi > \overline{i}(\overline{\alpha v} - c + Br) + (1 - \overline{i})(1 - e)(\overline{\alpha v} - c + Br).
\]
Similarly, the unconcerned politician (who only starts projects she believes to be good) will prefer effort \(\overline{i}\) if and only if:
\[
\overline{i}(\overline{\alpha v} - c + Br) + (1 - \overline{i})\beta(1 - e)(\overline{\alpha v} - c + Br) - \psi < \overline{e}(\overline{\alpha v} - c + Br) + (1 - \overline{i})\beta(1 - e)(\overline{\alpha v} - c + Br).
\]
Taken together, these two conditions can be rewritten as:
\[
\overline{\alpha v} - c + Br - (1 - e)(\overline{\alpha v} - c + Br) > \frac{\psi}{\overline{i} - \overline{e}} > \overline{\alpha v} - c + Br - \beta(1 - e)(\overline{\alpha v} - c + Br).
\] (16)
The set of $\psi$’s that satisfy these conditions is nonempty: Indeed, since $\alpha v - c + Br < 0$, we have that:

$$\alpha \psi - c + Br - \beta(1 - e)(\alpha v - c + Br) < \alpha \psi - c + Br - (1 - e)(\alpha v - c + Br)$$

and moreover:

$$\alpha \psi - c + Br - (1 - e)(\alpha v - c + Br) > \alpha \psi - c + Br - (1 - e)(\alpha v - c + Br)$$

is equivalent to:

$$\psi > (1 - e)v,$$

which is clearly true.

We finally, have to make sure both politicians are happy to make their respective funding choices. Since we assume that $\alpha \psi - c + Br > 0$, the concerned politician is clearly happy to undertake all projects. We moreover assume that $\alpha v - c + Br < 0$, which means that the unconcerned politician does not want to fund projects she knows are bad. What we need to assume is that the unconcerned politician decides to fund projects she thinks are good but is aware may be bad, which requires:

$$i(\alpha \psi - c + Br) + (1 - i)\beta(1 - e)(\alpha v - c + Br) > 0 \quad (17)$$

We thus have the following result:

**Proposition 3** Assume $\beta(1 - i) > 1$ as well as conditions (16) and (17). Then concerned politicians exert high effort and try and fund all projects while unconcerned politicians exert low effort and only try and fund good projects. Politicians get reelected if and only if they undertake projects which are not blocked. Only unconcerned politicians are "happy to be blocked". Finally, a more efficient auditing system (i.e. 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 reelected, which reduces the concerned politician’s payoff; (ii) being blocked means realizing one was trying to fund a bad project, which makes a 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.
4.2 Case 2:

From the discussion of case 1, we know that the inequality $\Pr[Good \mid Blocked] > p$ is equivalent to:

$$\beta < \frac{1 - \tilde{i}}{1 - \tilde{i}}.$$  

This is the case where being blocked does not prevent reelection. This is somehow equivalent to the initial case without audits. The difference is that being blocked is still a signal on one’s quality, with two subcases: One where $\Pr[Good \mid NotBlocked] > \Pr[Good \mid Blocked]$ and one where $\Pr[Good \mid Blocked] > \Pr[Good \mid NotBlocked]$. The first one is equivalent to:

$$\frac{p \left[ \tilde{i} + (1 - \tilde{i}) (1 - e) \right]}{p \left[ \tilde{i} + (1 - \tilde{i}) (1 - e) \right] + (1 - p) \left[ \tilde{i} + (1 - \tilde{i}) \beta (1 - e) \right]} > \frac{p (1 - \tilde{i}) e}{p (1 - \tilde{i}) e + (1 - p) (1 - \tilde{i}) \beta e}$$

which implies that:

$$\frac{(1 - \tilde{i}) \tilde{i}}{(1 - \tilde{i}) \tilde{i}} < \beta$$

Case 2a, defined by $\Pr[Good \mid NotBlocked] > \Pr[Good \mid Blocked] > p$, can therefore be summarized as:

$$\frac{(1 - \tilde{i}) \tilde{i}}{(1 - \tilde{i}) \tilde{i}} < \beta < \frac{(1 - \tilde{i})}{(1 - \tilde{i})}.$$  

Thus we conclude that blocking the project can be a bad signal even if it does not prevent the politician’s reelection, so long as $\beta$ lies above some threshold which is lower than the reelection threshold in proportion to the ratio of the unconcerned politician’s effort to the concerned politician’s effort.

Case 2b, defined by $\Pr[Good \mid Blocked] > \Pr[Good \mid NotBlocked] > p$, can instead be summarized as:

$$\beta < \frac{(1 - \tilde{i}) \tilde{i}}{(1 - \tilde{i}) \tilde{i}}$$

In this case, being blocked is a good signal of quality of the politician, because it means a bad project, and such projects are mainly started by concerned politicians.

Both subcases are very similar, since they both mean that being blocked does not prevent reelection. As in case 1, let us look for an equilibrium where
the concerned politician chooses effort $\tilde{t}$ and the bad one chooses effort $\hat{t}$. Given
that in this case reelection happens whenever the project is started, whether it
gets blocked or not, the concerned politician (who starts all projects, good and
bad) will prefer effort $\tilde{t}$ if and only if:

\[ \tilde{t}(\underline{\alpha v} - c) + (1 - \tilde{t})(1 - e)(\underline{\alpha v} - c) + Br - \psi \]

\[ > \hat{t}(\underline{\alpha v} - c) + (1 - \hat{t})(1 - e)(\underline{\alpha v} - c) + Br. \]

Similarly, the unconcerned politician (who only starts projects she believes
to be good) will prefer effort $\hat{t}$ if and only if:

\[ \hat{t}(\underline{\alpha v} - c + Br) + (1 - \hat{t})\beta [(1 - e)(\underline{\alpha v} - c) + Br] - \psi \]

\[ < \tilde{t}(\underline{\alpha v} - c + Br) + (1 - \tilde{t})\beta [(1 - e)(\underline{\alpha v} - c) + Br]. \]

Taken together, these two conditions can be rewritten as:

\[ \underline{\alpha v} - c - (1 - e)(\underline{\alpha v} - c) \]

\[ > \frac{\psi}{\tilde{t} - \hat{t}} > \underline{\alpha v} - c + Br - \beta [(1 - e)(\underline{\alpha v} - c) + Br]. \] (18)

As in case 1, it can be checked that the set of $\psi$’s that satisfy these con-
ditions is nonempty. Note also that, in comparison with case 1, both bounds
surrounding $\psi/(\tilde{t} - \hat{t})$ are lower here: intuitively, incentives to exert effort go
down when being blocked (which comes with a bad project, and therefore lower
effort) does not prevent reelection any more.

As in case 1, we finally, have to make sure both politicians are happy to
make their respective funding choices. Since we assume that $\underline{\alpha v} - c + Br > 0$,
the concerned politician is clearly happy to undertake all projects. We moreover
assume that $\underline{\alpha v} - c + Br < 0$, which means that the unconcerned politician does
not want to fund projects she knows are bad. As for the bad politician, two
things have to be checked now: First, as in case 1, we need to assume that the
unconcerned politician decides to fund projects she thinks are good but is aware
may be bad, which requires here:

\[ \hat{t}(\underline{\alpha v} - c + Br) + (1 - \hat{t})\beta [(1 - e)(\underline{\alpha v} - c) + Br] > 0 \] (19)

This condition is in fact easier to satisfy than in case 1, since reelection follows
even if the project is blocked. The second condition to be checked in case 2
is that unconcerned politicians do not start projects they know are bad. This
could be the case in fact if bad projects are blocked often enough, all this
without compromising reelection. This will not happen provided:

\[ (1 - e)(\underline{\alpha v} - c) + Br < 0 \] (20)

which requires $e$ not to be too high, that is, audits not to block too many bad
projects.

We thus have the following result:
Proposition 4 Assume $\beta(1-i) < \tilde{t}$ as well as conditions (18), (19) and (20). Then concerned politicians exert high effort and try and fund all projects while unconcerned politicians exert low effort and only try and fund good projects. Politicians get reelected whether or not the project they undertake is blocked. Both politicians are "happy to be blocked", and a more efficient auditing system (i.e. a higher $e$) makes it less attractive for both to choose high effort.

The intuition for politicians’ attitudes towards audits is that being blocked means avoiding to have to undertake a costly project while still being reelected, which is good for both types of politicians, i.e. even for concerned politicians who knew their project was bad. This is true whether we are in case 2a or case 2b, that is, 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 in case 2a even if this slightly reduced the chances of reelection. Finally, the impact of more efficient audits on incentives to exert effort is intuitive: Getting reelected requires undertaking a project, which entails a cost $c - \alpha v$ if the project is bad, and exerting effort helps reduce the probability of finding a bad project; audits however allow for reelection while saving on this cost $c - \alpha v$, thereby making low effort less costly for politicians.

5 A Continuum of Projects

In this section we relax the assumption that projects come in just two qualities, $v$ and $\bar{v}$, and instead suppose that they are distributed along a continuum; this will allow us to look at the effect of auditing on the kinds of project that are approved by politicians, by examining 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 $\bar{v}$ when $i = 0$ and a mean of $v$ when $i = 1$, and a support (conditional on $i$) of length $\bar{v} - v$. This implies that we can write the expectation of $v$ given $i$ as

$$E(v | i) = \bar{v} + i(\bar{v} - v) \quad (21)$$

and conditional support

$$\left(E(v | i) - \frac{(\bar{v} - v)}{2}, E(v | i) + \frac{(\bar{v} - v)}{2}\right) \quad (22)$$

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

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

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 $v = \bar{v}$ and $\gamma e$...
for \( v = \overline{v} \). 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

\[
Pr(\text{blocked} \mid v) = e \left( 1 - (1 - \gamma) \frac{(v - (\overline{v} - \frac{\overline{v} - v}{2}))}{2(\overline{v} - v)} \right)
\]

(23)

It should be noted that the unconditional support of \( v \) is the interval \( [\overline{v} - (\overline{v} - v) - \frac{1}{2}(\overline{v} - v), \overline{v} + (\overline{v} - v) - \frac{1}{2}(\overline{v} - v)] \), so this rule yields a blocking probability of \( e \) for the lowest observable project value, which is not \( v \) but \( \overline{v} - (\overline{v} - v) - \frac{1}{2}(\overline{v} - v) \), and a blocking probability of \( \gamma e \) for the highest observable project value which is not \( v \) but \( \overline{v} + (\overline{v} - v) - \frac{1}{2}(\overline{v} - v) \).

We can therefore look at the impact of auditing on the incentives for both types of politician to approve projects of various qualities. If we ignore the impact of blocking on the re-election probability (we may consider this later), a politician of type \( \alpha \) will approve a project of value \( v \) iff

\[
(1 - Pr(\text{blocked} \mid v))(\alpha v - c) + Br \geq 0
\]

Substituting equation 23 and defining \( v^* \) as the threshold value that sets the inequality equal to zero yields

\[
G(e, \alpha, v^*) \equiv \left( 1 - e \left( 1 - (1 - \gamma) \frac{(v^* - (\overline{v} - \frac{\overline{v} - v}{2}))}{2(\overline{v} - v)} \right) \right)(\alpha v^* - c) + Br = 0
\]

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 politician 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 \( v^* \):

\[
\frac{dG(e, \alpha, v^*)}{dv^*} = \alpha \left( 1 - e \left( 1 - (1 - \gamma) \frac{(v^* - (\overline{v} - \frac{\overline{v} - v}{2}))}{2(\overline{v} - v)} \right) \right) + \frac{e(1 - \gamma)(\alpha v^* - c)}{2(\overline{v} - v)}
\]

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 \( e \):

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

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, \( \frac{d^2 G(e, \alpha, v^*)}{ded\alpha} < 0 \) while \( \frac{d^2 G(e, \alpha, v^*)}{de dv^*} > 0 \), 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 5** Assume that projects are distributed as a function of the politician's effort with conditional mean and support given by conditions 21 and 22 respectively, and the probability that a project is blocked by the auditor is given by condition 23. Then the more effective is auditing as measured by a higher value of \( e \), the lower quality will be the projects that 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 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. 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 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 politicians wants 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". 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. Exploring both this predicament and ways of resolving it are promising avenues for further research.

7 Bibliography


3Wolfgang Munchau, personal communication.

