

ISSN 1471-0498



DEPARTMENT OF ECONOMICS

DISCUSSION PAPER SERIES

**SCANDAL, PROTECTION, AND RECOVERY IN POLITICAL
CABINETS**

Torun Dewan and David P. Myatt

Number 237

June 2005

Manor Road Building, Oxford OX1 3UQ

Scandal, Protection, and Recovery in Political Cabinets

Torun Dewan

Department of Government, London School of Economics

t.dewan@lse.ac.uk

David P. Myatt

Department of Economics, University of Oxford

david.myatt@economics.ox.ac.uk

Discussion Paper. June 2005.¹

Abstract. Empirical evidence suggests that a Prime Minister can benefit from firing ministers who are involved in political scandals. We explore a model in which a minister's exposure to scandals is positively related to his policy activism, so that a Prime Minister may wish to protect him from resignation calls. We find that protection can sometimes work against the objective of encouraging activism: it makes a minister's position more valuable to him and hence can encourage him to "sit tight" by moderating his activities. On the other hand, an exogenous increase in exposure to scandals may lead a minister to "live for today" by pursuing controversial policy innovations. The Prime Minister's ability to protect ministers from resignation calls is limited by her short-term incentive to fire. She may, however, enhance her credibility by building a collective reputation with the wider membership of her cabinet; we show that heterogeneity of cabinet membership can play an important role.

1. INTRODUCTION

1.1. Scandal, Resignation, and Protection. In Liberal Democracies scrutiny of ministers is carried out by politicians through legislatures and legislative committees, and through media attention given to specific cases. Such scrutiny often leads to calls for ministerial resignations. These calls are sometimes heeded, and a minister is forced to resign. In other circumstances, the support of the Prime Minister and the wider cabinet is enough to protect the minister's position. The different outcomes reflect the incentives which the different political actors face. Recent research establishes some interesting preliminary empirical regularities which can help us to understand the type of incentives which are at work in parliamentary democracies (Dewan and Dowding, 2005; Huber and Galliaro, 2004; Indridason and Kam, 2003). Here we build upon one of these findings. Dewan and Dowding (2005) show that, when there has been a call for a ministerial resignation, the popularity of the government increases when that call is heeded. Thus a Prime Minister can adjust for the negative effect of scandals and policy failures by replacing a minister involved in such events.

¹For their helpful comments and suggestions, thanks are due to Keith Dowding, Indridi Indridason, Valentino Larcinese, Christian List, Ken Shepsle, and seminar participants at ECPR Granada, Harvard University, the London School of Economics, the Midwest Political Science Association, and the University of Montreal.

If the public react positively to the departure of a minister involved in a policy failure or personal scandal, then why does a Prime Minister not always accede to calls for his resignation? An answer stems from observing that a protection policy impacts upon the incentives of a minister. If a minister expects to be fired whenever a call is made for his resignation, then he may distort his activities away from actions that are likely to expose him to such calls. This may be a good thing for the executive if it leads to ministers refraining from an activity which is detrimental not only to the minister's career but reflects badly upon the government as a whole. If ministers refrain from personal activities not deemed suitable for those in public office, for example if they restrain themselves from dipping their hands into the public purse, then all is well and good.

On the other hand, the incentive for a minister to keep a clean record may detract from the policy objectives of the executive: behaviour which is correlated with resignation calls may also be correlated with actions which are beneficial to the government. Consider, for example, the case where a policy failure arises due to a new initiative put forward by a minister. We would expect that such failures are more likely to arise the more policy initiatives a minister puts forward. The Prime Minister may wish to protect a minister who puts forward policy initiatives thereby creating an incentive for other ministers to do likewise.

We might think that the Prime Minister can clearly differentiate between the case where a minister is subject to criticism due to a policy failure and one who is harried due to some personal scandal. Things may, however, not be so clear cut, since policy-active ministers may be subject to other forms of criticism. Those who are affected by the policy initiatives may wish to discredit the minister responsible in a deliberate attempt to see the minister removed from his post. Such a negative campaign need not focus on the policy relevant aspects of the ministers job. Things can and do get nasty.

To illustrate this effect, consider the resignation of David Mellor, the former British Secretary of State for Heritage whose brief included regulation of the press. Mellor had voiced concerns about press intrusion into privacy and was known to be sceptical about the role of the Press Complaints Commission, a self-regulating non-statutory body, and famously remarked that the "the popular press is drinking in the last-chance saloon." This was no idle threat. Mellor had a reputation for taking on special interests in the media having previously taken the 1990 Broadcasting Act through parliament and ended what many Conservatives thought was a lack of accountability of private TV companies. Mellor resigned after tabloid allegations that he had accepted air tickets and the use of a villa from Monica Bauwens, the daughter of

a leading official in the Palestine Liberation Organisation. The tabloids also brought to light details of his affair with actress Antonia de Sanchez. There is little doubt that *The People* saw their investigation into Mellor as a warning shot to politicians about press freedom. As stated by Doig (1993) “the expose by *The People* was seen by both sides as an attempt to underline the consequences of tighter restrictions on what the press could publish.”

As this example illustrates, it may be costly for ministers to develop policy initiatives if these lead to resignation pressures following a scandal, where “scandal” is a generic term which captures a call for a resignation related to either a policy failure or some personal impropriety. This suggests a formal study of a Prime Minister’s “protection policy” in the light of ministerial scandals.

1.2. Modelling the Protection Policy. In this paper we study a simple model which helps us to explore how different incentives are reflected in the actions of the cabinet. In our model the policy activism of the minister brings its reward through higher performance. But such activism also brings risks. The probability that the minister is involved in a scandal is increasing in his level of policy activism. Thus a minister minimises his risk by sitting tight, and maintaining the status quo in order not to tread on the toes of organised interests who are opposed to reform. Such interest groups include opposition parties, lobbies, and media who are in a position to wage a campaign against the minister.²

In our model a minister may be in one of two situations: (i) a minister may be known for his previous involvement in a scandal, in which case he is *tainted*; or (ii) the minister may have no record of involvement in a scandal, in which case he is *clean*. If a clean minister is hit by a scandal, then the Prime Minister makes the choice whether to fire him or protect him. If a tainted minister is hit by a scandal, we assume that political pressures are so great that the Prime Minister is forced to fire him; thus a minister faces a “two strikes and out” rule. As well as exploring the effect of protection we also focus on the ability of a tainted minister to recover from a scandal. Over time, we suppose that scandals are forgotten; a tainted minister hit by such a *recovery* returns to a state in which his record is clean.

²The idea that policy efforts are correlated with political risk has been developed by others. Dal Bó, Dal Bó, and Di Tella (2004) modelled a politician who is either bribed or threatened by an interest group. It is costly for a politician to act against the interest group because the group may harm the politician, and furthermore the politician will not receive the bribe. They observed that increased policy activism may lead to resignation calls, by noting that politicians may (p. 7) “. . . claim that their own actions are constrained by the influence of pressure groups that might resort to smear campaigns in the media and legal harassment.” Dal Bó and Di Tella (2003) developed the same model but where the politician may be protected by a political party. Their notion of protection is one where a party prevents costly attacks by pressure groups. In our paper, a Prime Minister experiences political unpopularity in order to resist a resignation call.

The problem for the Prime Minister is that the public are always willing to believe the worst. That is, even though the public are aware of a correlation between policy activism and scandal, on observing a scandal the executive's popularity nonetheless falls. It is therefore costly to protect a minister who is tainted. It may nevertheless be optimal to provide some protection if ministers choose higher levels of activity under protection. As a first step, we suppose that a Prime Minister is able to commit to a certain level of a protection for clean ministers who are not tainted by scandal. As the level of protection drops, the Prime Minister increases the probability with which a "first-strike" minister is fired.

At first blush, we might suspect that an increase in protection will increase the political activism of cabinet members: a minister realises that he is less likely to be fired following a scandal, and therefore is more willing to take a chance by implementing risky policies. This is, in economic parlance, a *substitution* effect: the minister faces an incentive to substitute away from the status quo, and toward the core objectives of the executive.³

There is, however, a second effect. Consider a minister who is tainted by scandal. This tainted minister realises that he will not be protected from any further scandal, following the "two strikes and out" rule. He faces, therefore, an incentive to "keep his nose clean" in the hope that the scandal is subsequently forgotten. If the scandal is forgotten, then an increased level of protection for otherwise-clean ministers will increase the expected value of such a position; this, in turn, increases the incentive for him to keep his nose clean when tainted. This is, in economic parlance, an *income* effect: the minister faces an increased incentive to keep his job, and hence biases his actions toward safe policies.

Putting these effects together, a clean minister responds positively to higher levels of both protection and recovery with increased activism. We find the opposite effect for a tainted minister. A Prime Minister must take these opposing effects into account when formulating her protection policy: the income effect limits her desire to offer protection.

The results discussed above suppose that a Prime Minister is able to commit to a particular level of protection. The incentive for her to offer protection if a minister is involved in a

³A sporting example illustrates this effect. In the game of Association Football a player receives a yellow card for a misdemeanour; a second yellow card results in the player's dismissal for the remainder of the match. A player who is on a yellow card knows that if he commits a further foul he may be sent off and thus will be more careful in his challenges on the opposing team's players. The coach has an incentive to substitute such a player with a "clean" player from the bench since (i) there is the risk that the team will be left a player short and (ii) the yellow carded player may play over-cautiously. The coach may, however, refrain from such a policy. If all yellow carded players are immediately replaced then even clean players are likely to play cautiously in the knowledge that a single yellow card will lead to them being substituted.

scandal for the first time is that protected ministers may choose higher levels of policy activism under protection than they would otherwise. On the other hand, the Prime Minister's popularity is adversely affected by the presence of tainted ministers in her cabinet. Thus, a commitment to a given level of protection is not credible in a one-shot game due to a short term incentive for the Prime Minister to fire. It may, of course, be the case that ministers can act to remove a Prime Minister who goes against her word. However, the threat to do so can itself lack credibility. In particular, if the Prime Minister is an electoral asset for the party then ministers would be loathe to remove her.

Another mechanism which could ensure credible commitment is a Prime Minister's concern for her own reputation. In repeated interaction she may develop a reputation (within her cabinet) for protecting ministers and could thus induce higher activism levels. We consider, therefore, the constraints that such a situation imposes on a Prime Minister.

To understand the forces involved, suppose that a Prime Minister pledges protection to an individual minister. If she were to renege on her promise in the face of a scandal, then the minister's replacement would not believe her in the future; the Prime Minister will lose her credibility. This provides the Prime Minister with an incentive to keep her promises.

Alas, if the short-term incentive for her to cave in to resignation calls is too great, then she will be unable to sustain her protection policy. A possible resolution is to exploit the interaction with multiple cabinet members. Suppose, for example, that a failure to protect an individual cabinet member is observed by all of his cabinet colleagues. In this setting, the Prime Minister enjoys the short-term gain from firing only a single minister, but loses her reputation with the entire cabinet. If the cabinet is sufficiently large, then this argument suggests that the long-term loss of reputation is sufficient to outweigh her short-term temptation to fire, and hence may restore credibility to the Prime Minister's protection policy. In the economics literature, this idea is known as multi-market contact. Bernheim and Whinston (1990), for instance, considered the collusion of oligopolists who interact in more than one market. The central idea is that collusion will be sustained because if a firm cheats (perhaps by cutting its price) in one market, then it will be punished (by, for instance, prompting a retaliatory price war) in multiple markets. The analogy here is that although a Prime Minister is tempted to cheat on an agreement with one minister, she would then be punished by the entire cabinet.

Unfortunately, and as Bernheim and Whinston (1990) argued in their work, this idea has its flaws. Given that a Prime Minister would lose her reputation by firing an individual minister, she may as well fire all tainted ministers; with her reputation in tatters, she will

go all out and reshuffle the entire cabinet. This is important, because there is always the chance that the cabinet will reach a situation in which a large fraction of its members are tainted. In this circumstance, her short-term temptation is the gain from firing all of the tainted ministers; this temptation may well be just as large as the punishment, and at that point she caves in: the Prime Minister’s attempt to maintain her reputation will unravel.

Nevertheless, there are circumstances in which a concern for reputation will lead to a credible protection policy. Perhaps surprisingly, a necessary condition for this to be the case is a degree of heterogeneity in the cabinet.⁴ In an illustrative example, we consider a cabinet with two different kinds of ministers: the first kind recover from scandal relatively quickly, whereas the second have no chance of recovery. We find that in this setting the Prime Minister is able to maintain credibility. For some ministers, the temptation to fire would, absent the collective reputation in the cabinet, be too strong, whereas for others it would not. By pooling these effects, the Prime Minister can use the reputational slack in one relationship to compensate for the lack of credibility in another.

This example provides insight into how cabinet composition affects the ability of Prime Minister to establish a credible protection policy. In a scenario in which she can select different types of ministers (which we do not model explicitly here) one might expect her to choose high-recovery types only, the more so since such ministers are cheaper to protect. Perhaps surprisingly, these are the types of ministers that lead to credibility problems. Once such a minister is tainted, they will sit tight and avoiding policy activism in the hope that a scandal blows over. Such ministers are essentially “sitting ducks,” and the Prime Minister faces a strong temptation to fire them. However, the inclusion of low-recovery types can help mitigate this incentive. In contrast to higher-recovery types, when low-recovery ministers are hit by scandal, they adopt a “live for today” attitude since they have no hope that the effect of the scandal will abate. For that reason, they will soon be hit by a second scandal and will depart. The Prime Minister has a reduced temptation to fire such ministers.

1.3. A Guide to the Paper. In Section 2 we write down our formal model of ministerial turnover, and characterise ministers’ optimal levels of political activism in Section 3. In Section 4 we consider the optimal level of protection when a Prime Minister is able to commit, whereas in Section 5 assess both the credibility of such policies and the cabinet’s role in maintaining a collective reputation. We conclude in Section 6.

⁴This is also true in the model of Bernheim and Whinston (1990). They demonstrated that multi-market contact can enhance the ability of oligopolists to collude when the markets have different characteristics.

2. SCANDAL AND RECOVERY

Here we develop a simple model of scandal arrival and recovery for cabinet ministers.

2.1. Ministerial Activism, Scandals, and Recovery. We imagine a political scenario in which a cabinet is led by a Prime Minister, and focus on the behavior of a particular cabinet minister and his relationship with the Prime Minister. (In Section 5 we extend our analysis to the relationship between the Prime Minister and a multi-member cabinet.)

At each moment in continuous time, the minister controls a single variable: his level of political activism, denoted $a \geq 0$. We interpret this activism as the number of new policy initiatives that are pursued in the ministry. Increased political activism exposes a minister to an increased risk of scandal, and hence subsequent resignation calls. Here, and as noted in Section 1, we interpret a scandal as the failure of a policy initiative. Thus, when the Prime Minister receives a call for a minister's resignation, this call is based upon a critique of the minister's political pro-activism, rather than unscrupulous behaviour or straightforward incompetence; alternatively, if it is based on the latter factors, then we suppose that it is the minister's policy activism that prompted the discovery of such factors, via increased visibility in the media. Formally, we suppose that the arrival of scandals follows a Poisson process, with an arrival rate of $\lambda(a)$. This rate is strictly increasing, convex, and continuously differentiable in a : by increasing individual activism, and hence leading the cabinet to take a more aggressive stance on policy, the minister increases his exposure to political scandals.

A minister may or may not have an established record of involvement in scandals. Prior to the arrival of a scandal, a minister is said to be *clean*; following the arrival of a scandal, he becomes *tainted*. A minister remains tainted until the scandal is forgotten. When such amnesia sets in, the minister *recovers* and returns to a clean position; this reflects the view that, over time, scandals blow over, and stories disappear from the media. In truth, we might expect the media, political opponents, and other relevant actors to keep longer records of a minister's performance; our aim here, however, is to capture the idea that ministers are able to weather the storm. Formally, we suppose that a minister's recovery follows a Poisson process with an arrival rate of β . For simplicity, this rate is unaffected by any actions taken. (Allowing this recovery rate to depend on the minister's continuing activism would not change the results in any important way.)

2.2. The Role of the Prime Minister. The Prime Minister makes hiring and firing decisions contingent only upon the arrival of any scandal and the minister's current reputation.

For simplicity, we assume that when a scandal hits an already-tainted minister, then resignation pressures are irresistible: such a minister is automatically fired. It follows that a Prime Minister operates, by assumption, a “two strikes and out” firing rule. When a clean minister is hit by scandal, however, the Prime Minister is endowed with greater discretion, and may take one of two actions: (i) she may *protect* the minister, so that the minister in question becomes tainted; (ii) she may *fire* him, in which case a clean replacement maintains the clean reputation of the cabinet post in question.

We restrict attention to the following (stationary) protection policy: when a clean minister is hit by a scandal, the Prime Minister fires that minister (the minister is invited to quit) with probability q ; equivalently, the level of protection offered is $p = 1 - q$. Thus, all else equal, the exposure of a clean minister to the loss of his job following a call for his resignation may be limited. A tainted minister, on the other hand, is fully exposed to such risks.

Central to our paper is an investigation of the impact of different ministerial protection policies. One such policy is the complete absence of protection: any minister (whether clean or tainted) is automatically fired following a call for his resignation. Since this acts as a benchmark for our analysis, we will refer to such a regime as the operation of a “squeaky clean” protection policy. Formally, it corresponds to $q = 1$, or equivalently $p = 0$.

2.3. Commitment and Credibility. Ideally (from her perspective) the Prime Minister would be able to pre-commit to a particular protection policy. For some of our analysis, we suppose that she is able to do just that. For other analysis, however, the Prime Minister must ensure that her ministerial protection policy is incentive compatible. Given that full commitment is impossible, we suppose that ministers in the cabinet are able to observe whether she operates her stated policy. This is tantamount to assuming that ministers are able to observe the probability with which she fires a scandalised minister.

An immediate objection to such a stance is that ministers will be able to observe the actual decision taken (that is, fire or protect) but not the probability distribution over these decisions. Nevertheless, this objection may be overcome via a number of mechanisms. One such mechanism is to suppose that, for instance, the clamour for the resignation of a minister is not fixed, but subject to some noise. The Prime Minister’s policy would then be to protect a minister so long as demands for the minister’s resignation are not too large. Alternatively, we might suppose that the extent of the failure of a policy initiative (for that is our interpretation of a political scandal) is observed by the entire cabinet, and the Prime Minister promises to fire ministers when the failure is sufficiently large. Rather than include such

mechanisms within our model, and appealing to a desire for parsimony, we go ahead and suppose that the level of protection exercised by the Prime Minister is observed.

Given that ministerial protection is observed, and full pre-commitment is impossible, we must consider a situation in which a Prime Minister deviates from her stated protection policy. Since such a deviation would likely arise from the Prime Minister firing a scandalised minister to whom she had pledged protection, we suppose that, following such a deviation, all cabinet ministers assume that the Prime Minister, from that moment on, will operate a squeaky clean hiring-and-firing policy. In turn, given that this is the case, the Prime Minister will no longer face an incentive to protect tainted ministers. Thus we assume that if the Prime Minister deviates, and fails to offer sufficient protection for a scandalised minister, then she chooses to fire all tainted ministers from her cabinet. Essentially, she re-shuffles.

In summary, all ministers are initially clean. The Prime Minister states a protection policy, characterised by the firing probability q . Cabinet members assume that the Prime Minister will follow her stated policy, unless she deviates. If she does, then all tainted ministers are fired. From that time onwards, any minister hit by a scandal is automatically fired, and hence the cabinet remains in a squeaky-clean state.

2.4. Payoffs. We turn to payoffs. A minister enjoys a positive flow payoff from holding his position, and a zero flow payoff if fired by the Prime Minister. The flow payoff from cabinet membership is strictly increasing in the activism of the minister's department for $a < \bar{a}$, and decreasing for $a > \bar{a}$. Thus, $\bar{a} > 0$ represents the otherwise-ideal level of political activism, the minister's flow payoff is single-peaked around this value; in the absence of any other factors, a minister would choose a policy activism of $a = \bar{a}$. Just below, we will assume that the Prime Minister agrees that \bar{a} is the ideal level of activism. Thus, a Prime Minister and cabinet member face no underlying conflict in their political preferences.

We also assume that the flow payoff is affected by the minister's reputation. Formally, a minister's flow payoff is $v_H(a)$ when he is clean, and $v_L(a)$ when the minister is tainted. We assume that $v_H(a) \geq v_L(a)$ so that, other things equal, a minister would rather be free of scandal. Both of these functions are assumed concave and differentiable, and are maximised at \bar{a} . A minister discounts the future at rate γ .⁵

The Prime Minister cannot be fired. We recognise that, at some point in time, the electorate (or others such as her party) may choose to relieve her of position. Nevertheless, we will

⁵Using t to index time, and writing the minister's activity at time as a_t and his reputation as $R_t \in \{H, L\}$, if the minister is fired at time T then he enjoys a payoff of $\int_0^T \exp(-\gamma t) v_{R_t}(a_t) dt$.

appeal to discounting in order to capture the limits to political tenure. The Prime Minister enjoys a flow payoff from the performance of ministers in her cabinet. That flow payoff is reflected in functions $w_L(a)$ and $w_H(a)$, which have similar properties to $v_L(a)$ and $v_H(a)$. In particular, we will assume (for simplicity) that the Prime Minister shares an ideal degree of political activism \bar{a} with her ministers. She discounts the future at rate $\hat{\gamma}$.

3. POLICY ACTIVISM

By assumption, the Prime Minister offers a level of protection $p = 1 - q$ to each of her ministers. Since the reputation of other departments does not enter into a minister's payoffs, we are able to consider each minister in isolation. Doing so, let us write a_H for the equilibrium activism of a clean minister, and a_L for the activism of a tainted minister. On the equilibrium path, we write V_L for the present-discounted payoff of a tainted minister and V_H for the present-discounted payoff of a clean minister. For now, we assume that the Prime Minister is able to credibly commit to a protection policy.

3.1. Optimal Ministerial Activism. We now consider the Bellman equations that must be satisfied by V_H , a_H , V_L , and a_L . We first consider the situation of a clean minister. Given that the discount rate is γ , the per-period flow payoff from holding this clean position is simply γV_H . This flow payoff arises from two sources. First, the minister enjoys a direct flow payoff of $v_H(a_H)$. Second, events may occur to change the status of the minister. Specifically, there are two status-changing possibilities: (i) the minister is hit by a scandal and then fired; or (ii) the minister is hit by a scandal, and protected. Combining the flow payoff with these two effects, and imposing the optimal choice of activism,

$$\gamma V_H = \max_{a \geq 0} \left[v_H(a) - \underbrace{\lambda(a)qV_H}_{\text{(i) fired}} - \underbrace{\lambda(a)(1-q)(V_H - V_L)}_{\text{(ii) protected}} \right]$$

and where a_H solves the optimisation problem. Notice that (for $a < \bar{a}$) an increase in activism increases the direct flow payoff from holding a clean ministerial position, but also increases the arrival rate of scandals, and hence a fall of $V_H - pV_L$ in the minister's (presented discounted) payoff. Since $v_H(a)$ is concave and $\lambda(a)$ is convex, the appropriate first-order condition characterises a solution to the optimisation problem.⁶ In fact, setting $p = 1 - q$,

$$\gamma V_H = v_H(a_H) - \lambda(a_H)[V_H - pV_L] \quad \text{and} \quad v'_H(a_H) = \lambda'(a_H)[V_H - pV_L]. \quad (1)$$

⁶The first-order condition applies for an interior solution. Alternatively, $a_H = 0$ may be a solution if $v'_H(0) \leq \lambda'(0)[V_H - pV_L]$. Similarly, for a tainted minister a solution $a_L = 0$ would require $v'_L(0) \leq \lambda'(0)V_L$.

We turn to the payoff of a tainted minister. He enjoys a direct flow payoff of $v_L(a_L)$. Two events may occur: (i) the minister is hit by a scandal and automatically fired; and (ii) the minister recovers from the previous scandal, and his reputation is restored. Hence,

$$\gamma V_L = \max_{a \geq 0} \left[v_L(a) - \underbrace{\lambda(a)V_L}_{\text{(i) fired}} + \underbrace{\beta(V_H - V_L)}_{\text{(ii) recovered}} \right],$$

and where a_L solves the optimisation problem. The choice of a_L is subject to the same trade-offs as a_H ; the key difference is that the penalty from encouraging scandals to arrive is the complete loss V_L of the minister's job. Employing the appropriate first-order condition,

$$\gamma V_L = v_L(a_L) - \lambda(a_L)V_L + \beta(V_H - V_L) \quad \text{and} \quad v'_L(a_L) = \lambda'(a_L)V_L. \quad (2)$$

3.2. Protection and Recovery. By examining (1) and (2) we may ascertain the effect of parameters such as p (degree of protection) and β (recovery rate) on a minister. A number of observations are immediate. First, the maintained assumption that $v_H(a) \geq v_L(a)$ ensures that, for a fixed level of activism, a minister enjoys a higher direct flow payoff when clean. Since a tainted minister faces a greater exposure to unemployment, it is straightforward to confirm that, overall, a minister would rather be clean than tainted. Second, an increase in the recovery rate moves a minister toward the preferred situation of being clean. Third, an increase in protection increases the minister's expected tenure, and hence the value of his position whether clean or tainted. All of these arguments may be established formally (see Appendix A for omitted proofs) and lead to the following lemma.

Lemma 1. $V_H \geq V_L$. Both V_H and V_L are increasing in recovery β and protection p .

Our attention now turns to the activism choices a_H and a_L of the minister. Studying the first-order conditions from (1) and (2), and bearing in mind the concavity of $v_H(a)$ and $v_L(a)$ and the convexity of $\lambda(a)$, comparative statics are straightforward. Inspecting the condition $v'(a_L) = \lambda'(a_L)V_L$, notice $v'(a_L) > 0$ and hence $a_L < \bar{a}$; a minister's caution will lead to activism that falls short of the ideal level agreed by him and the Prime Minister. Furthermore, an increase in V_L leads to a fall in a_L ; when a minister is tainted, his activism is determined by his simple desire to hold on to his job. Any increase in the value of his career (as reflected by V_L) results in a reduction of political activism. Thus, for such a tainted minister, changes in any parameters of the problem will feed through entirely via what we may call an income effect. Any parameter change (for instance, a change in the recovery

rate or in the level of protection) that raises the value of being a tainted minister will result in increased caution on the part of the minister: a reduction in activism a_L .

An inspection of the first-order condition $v'_H(a_H) = \lambda'(a_H)[V_H - pV_L]$ reveals that the primary restraint on a clean minister's activism is captured by the term $V_H - pV_L$. Of course, $V_H - pV_L > 0$ (following the fact that $V_H > V_L$, from Lemma 1) and hence $a_H < \bar{a}$. As $V_H - pV_L$ falls, the penalty of a scandal falls with it, and hence activism a_H will increase.

To ascertain the effect of parameter changes, we must recognise that there are both income and substitution effects. An increase in p will directly lead to a reduction in $V_H - pV_L$. This is a substitution effect: by offering protection, a Prime Minister is able to encourage risk-taking behaviour. On the other hand, an increase in protection (and in the recovery rate β) will tend to increase both V_H and V_L . These are income effects, and the net effect on $V_H - pV_L$ is ambiguous. To characterise the net effect of increased protection (similar analysis will apply to other changes) we differentiate the value equation with respect to p :

$$\begin{aligned} \gamma \frac{dV_H}{dp} &= \underbrace{[v'_H(a_H) - \lambda'(a_H)(V_H - pV_L)]}_{\text{zero from FOC}} \frac{da_H}{dp} - \lambda(a_H) \times \frac{d[V_H - pV_L]}{dp} \\ &= - \left[\lambda(a_H) \times \frac{d[V_H - pV_L]}{dp} \right]. \end{aligned}$$

Thus, $V_H - pV_L$ is decreasing in p so long as V_H is increase in p . If this is so, then an increase in p leads to an increase in the activism of a minister a_H . Summarising:

Lemma 2. *Activism satisfies $a_L < \bar{a}$ and $a_H < \bar{a}$. A local change in β or p leads to an increase in a_H if and only if it increases the value V_H of being a clean minister, and an increase in a_L if and only if it reduces the value V_L of being a tainted minister.*

We may combine this simple result with Lemma 1, which says that an increase in β or p leads to an increase in V_H . Following Lemma 2, this succeeds in raising activism; the combined income effects on V_H and V_L do not succeed in offsetting the substitution effect. On the other hand, the increase in V_L will have a countervailing effect of reducing the activism of a tainted minister. We obtain the following proposition.

Proposition 1. *An increase in either protection or the recovery rate will increase the policy activism of a clean minister, but reduce the activism of a tainted minister. Furthermore, if $v_L(a) = v_H(a)$ for each a , then $a_H \geq a_L$: a tainted minister tends to “sit tight.”*

The effect of increased protection on a clean minister seems uncontroversial: by protecting him, the Prime Minister introduces a safety net, and hence allows him to be more active.

As we can see, the total effect is somewhat more subtle, as it feeds through both income and substitution effects. The presence of income effects now allows us to understand the effect on the tainted minister: such a minister finds the position as a clean minister to be more valuable, and hence is tempted to “sit tight” and wait for recovery. Thus, if a Prime Minister chooses to offer protection, she must bear in mind the fuller effects of this policy.

Of course, the secondary effect on a_L does not take place when there is no chance of recovery. If $\beta = 0$, then V_H does not enter into the value equation for a tainted minister. Thus, an increase in protection has no effect on V_L , and in turn no effect on a_L . Increased protection unambiguously increases political activism so long as recovery is impossible; this will be the case if scandals are never forgotten.

The final claim of Proposition 1 imposes $v_L(a) = v_H(a)$, so that a minister’s desire to remain clean stems from higher job security and nothing else. Since $a_H \geq a_L$, the Prime Minister will prefer ministers to be clean rather than tainted; equivalently (and as we shall see in later sections) the Prime Minister will be tempted to abandon her protection policy and fire those afflicted by scandal.

3.3. Exogenous Exposure to Scandals. Our model, while simple, reveals that the effects of protection and recovery are somewhat subtle. The same is true when we turn our attention to changes in the arrival rate of scandals. Let us adopt the functional form $\lambda(a) = \bar{\lambda} + a$. Thus, the arrival rate of scandals is equal to a basic arrival rate $\bar{\lambda} > 0$, plus a term that is linear in political activism. In this environment, an increase in $\bar{\lambda}$ has no direct effect on $\lambda'(a)$; its effect must feed entirely through any income effects. In fact, such an increase will reduce the value of a minister’s position, whether clean or tainted. Since V_L falls, we will certainly see a reduction in a_L . The activism of a clean minister, however, depends upon the difference $V_H - pV_L$ (where this difference precisely measures the penalty from being hit by a scandal when clean) and this may rise or fall with an increase in $\bar{\lambda}$.

Proposition 2. *An exogenous increase in exposure to political scandals will enhance the activism of tainted ministers. It will also enhance the activism of clean minister so long as protection is low; a sufficient condition is $p < \frac{1}{2}$. However, for a higher degrees of protection, and when the recovery rate is high, a clean minister will reduce his activism.*

The interesting effect is on tainted ministers: as a tainted minister faces increased exposure, the value of his job falls. He has an enhanced incentive to “live for today” and increase his activism. This effect will dominate in a world with no protection, to which we now turn.

3.4. A Squeaky Clean Cabinet. Before concluding this section, we turn to consider the behaviour of ministers who participate in a squeaky clean cabinet; that is, a cabinet in which no protection is afforded to ministers. In this environment, ministers are always fired when they attract a scandal. The value equation and first order condition for a minister are simply

$$\gamma V_H = v_H(a_H) - (\bar{\lambda} + a_H)V_H \quad \text{and} \quad v'_H(a_H) = V_H. \quad (3)$$

In this world, there is no protection, and hence a minister never enters the tainted state. This, in turn, implies that recovery plays no role. The exogenous exposure to scandals, however, still has an effect. An increase in $\bar{\lambda}$ will reduce V_H , and hence increase a_H . Thus, in a squeaky clean world, an exogenous increase in exposure to scandals results in more, not less, activism, and hence a further increase in the arrival rate of scandals. (This observation is a special case of Proposition 2; we are considering the case $p \leq \frac{1}{2}$.) Understanding the important part played by the income effect is key to this. When $\bar{\lambda}$ is high, all ministers realise that they are bound to be fired soon, and hence (as above) they live for today.

The implications are interesting. Suppose, for instance, that the underlying hazard rate of a minister is high, perhaps because of risk taking in the past. This will encourage him to take more political risks in the future. Similarly, if a minister has played it safe in the past, he will continue to do so. There is a sense, therefore, in which both high levels of activism and an adherence to the status quo are each, in turn, self-reinforcing modes of behaviour.

The characterisation of a squeaky clean cabinet given by (3) is simple, and hence we may obtain a closed-form solution for the minister's activism following the specification of a functional form for $v_H(a)$. A leading example is the following quadratic-linear specification

$$v_H(a) = \bar{v} - \frac{\theta(\bar{a} - a)^2}{2} \quad \text{and} \quad \lambda(a) = \bar{\lambda} + a. \quad (4)$$

$\bar{v} > 0$ represents a flow benefit from holding office. It provides a simple motivation for the minister to hold on to his job. The second term of $v_H(a)$ (a quadratic loss function) represents the disutility from operating at below the ideal level of political activism. The parameter θ then represents the degree to which the minister cares about political objectives.

Proposition 3. *Under the specification of (4) and a squeaky clean protection policy,*

$$a_H = \frac{1}{2} \left[\bar{a} - \gamma - \bar{\lambda} + \sqrt{(\bar{a} + \gamma + \bar{\lambda})^2 - \frac{2\bar{v}}{\theta}} \right] \quad \text{for} \quad \bar{v} \leq 2\bar{a}\theta(\gamma + \bar{\lambda}), \quad (5)$$

and $a_H = 0$ otherwise. Activism a_H increases with \bar{a} , γ , and $\bar{\lambda}$, and decreases with \bar{v}/θ .

Proposition 3 confirms the “live for today” effect by showing that activism increases with $\bar{\lambda}$. Activism also increases with a minister’s impatience γ and is influenced by a trade-off between a minister’s desire to hold office \bar{v} , and his desire to pursue political objectives θ . In summary, when there is no protection then activism is high when a minister is impatient, exogenously exposed to scandals, and cares little for the trappings of office.

4. PROTECTION

We now study the design of the Prime Minister’s protection policy. The Prime Minister’s flow payoff is the simple sum of flow payoffs obtained from the activism of each of her ministers. Furthermore, we assume here that she is able to commit credibly to her protection policy. Given these assumptions, it will be sufficient to focus on her relationship with a single minister. (In Section 5, we will remove the ability to commit, and the existence of a multi-member cabinet will impact upon the feasibility of different protection regimes.)

Prior to our analysis, we first develop intuition for the results that follow. The Prime Minister must choose the degree of protection offered to one of her ministers. As the analysis of Section 3 reveals, however, she must be aware of both the substitution and income effects of increasing protection. Furthermore, an increase in protection will lead to a higher incidence of tainted ministers. Since (following Proposition 1) tainted ministers reduce their activism in response to increased protection, such ministers essentially become “sitting ducks.”

4.1. The Prime Minister’s Objective. We follow the notation used in Section 3. Specifically, the Prime Minister offers a level of protection $p = 1 - q$ to an individual minister. That minister engages in activism a_H when clean, and a_L when tainted. We write W_H for the present discounted payoff of the Prime Minister when the minister is a clean state, and W_L when he is tainted. Based on our earlier logic, W_H and W_L must satisfy the two equations:

$$\hat{\gamma}W_H = w_H(a_H) - p\lambda(a_H)(W_H - W_L), \quad \text{and} \quad (6)$$

$$\hat{\gamma}W_L = w_L(a_L) + (\beta + \lambda(a_L))(W_H - W_L). \quad (7)$$

The intuition is as before: when the minister is clean, the Prime Minister enjoys a flow payoff of $w_H(a_H)$. If a scandal arrives and the minister is protected, then the Prime Minister must experience reduced popularity by keeping a tainted minister within her cabinet: she loses $W_H - W_L$. The second equation may be interpreted in a similar way: when the minister is tainted, the Prime Minister regains $W_H - W_L$ if either he recovers (recovery arrives at a

rate of β) or he suffers another scandal and she has a (welcomed) chance to replace him (an arrival rate of $\lambda(a_L)$). Solving these two equations simultaneously, we obtain

$$\hat{\gamma}W_H = \frac{w_H(a_H)(\hat{\gamma} + \beta + \lambda(a_L)) + w_L(a_L)p\lambda(a_H)}{\hat{\gamma} + \beta + p\lambda(a_H) + \lambda(a_L)}, \quad \text{and}$$

$$\hat{\gamma}W_L = \frac{w_H(a_H)(\beta + \lambda(a_L)) + w_L(a_L)(\hat{\gamma} + p\lambda(a_H))}{\hat{\gamma} + \beta + p\lambda(a_H) + \lambda(a_L)}.$$

We assume that the minister begins with a clean reputation. The Prime Minister's problem, therefore, is to choose the level of protection p to maximise W_H subject to the activism levels a_H and a_L chosen by the minister, which follow the Bellman equations (1) and (2).

4.2. The Conflicting Effects of Protection. Armed with these expressions, we identify the different effects of increased protection. Notice that $\hat{\gamma}W_H$ is the weighted sum of $w_H(a_H)$ and $w_L(a_L)$. Thus, changes in p affect these two flow payoffs and also their relative weighting.

Specifically, and following Proposition 1, there are two flow-payoff effects from an increase in p : (i) An increase in a_H and hence an increased flow payoff in the clean state; and (ii) the income effect reduces a_L and hence the flow payoff in the tainted state.

There are, however, further replacement effects. Put simply, changes in p change the typical composition of a cabinet. As protection is increased, the cabinet is more likely to contain tainted ministers. There are three reasons for this: (iii) increasing p directly increases the transition rate from clean to tainted, simply because scandalised ministers are more likely to be retained; (iv) this effect is exacerbated by the increase in $\lambda(a_H)$ following the increased policy activism of clean ministers; and (v) tainted ministers will, following an increase in protection, tend to sit tight; the reduction in $\lambda(a_L)$ means that it is less likely that the Prime Minister can use a second scandal as an excuse to replace them.

Note that all three factors (iii)–(v) serve to shift weight away from $w_H(a_H)$ and toward $w_L(a_L)$. In summary, increased protection has the desired effect of raising activism, but only for clean ministers. If $w_L(a_L) \leq w_H(a_H)$ (an inequality that is satisfied when $v_H(a) = v_L(a)$, for instance) then all other effects work against the Prime Minister.

The conflict in the effects of protection mean that it might be optimal to offer no protection at all. To demonstrate this fact, we simplify by setting $\lambda(a) = \bar{\lambda} + a$. Next, we note that when either $p = 0$ or $\beta = 0$ the factors (ii) and (v) are absent: when β is zero, the activity of tainted minister is independent of the protection level, and when p is small the effect of a fall in $w_L(a_L)$ is felt very rarely. With these simplifications made, we may limit attention to the remaining three factors (i), (iii), and (iv).

Lemma 3. *Setting either $p = 0$ or $\beta = 0$ or both, the effect of increased protection satisfies*

$$\frac{dW_H}{dp} > 0 \quad \Leftrightarrow \quad \frac{\partial a_H}{\partial p} \times \left[\underbrace{w'_H(a_H)}_{(i)} - \underbrace{p(W_H - W_L)}_{(iv)} \right] > \underbrace{(\bar{\lambda} + a_H) \times (W_H - W_L)}_{(iii)}. \quad (8)$$

By inspection, an increase in activism a_H increases the flow payoff $w'_H(a_H)$ via effect (i). This is countered by an increase in the arrival rate of scandals (ii) and the rate at which scandalised ministers are protected (iii). Setting $p = 0$, the inequality (8) is satisfied only if the introduction of protection has a sufficiently large effect on the activism of clean ministers.

We can obtain even sharper results by adopting a specific functional form for the preferences of the Prime Minister. A quadratic-loss specification, similar to (4), yields

$$w_H(a) = \bar{w}_H - \frac{\psi(\bar{a} - a)^2}{2} \quad \text{and} \quad w_L(a) = \bar{w}_L - \frac{\psi(\bar{a} - a)^2}{2} \quad \text{and} \quad \bar{w}_H > \bar{w}_L > 0. \quad (9)$$

$\bar{w}_H - \bar{w}_L$ represents the loss of popularity from carrying a tainted member of cabinet, whereas ψ reflects the Prime Minister's desire to pursue activism. Imposing $v_L(a) = v_H(a)$ on the preferences of the minister, we ensure that $a_H = a_L$ whenever $p = 0$, and hence the right-hand side of (8) reduces to $\lambda(a_H)(\bar{w}_H - \bar{w}_L)$. Thus, a Prime Minister finds it optimal to introduce protection so long as the loss of popularity for ongoing scandals is sufficiently small. In fact, once we impose the specification (4) on the minister, we can say more.

Proposition 4. *Assume that $v_L(a) = v_H(a)$, (4) holds for the minister and scandal arrival, and (9) holds for the Prime Minister. W_H is increasing in p at $p = 0$ if and only if*

$$\frac{\bar{w}_H - \bar{w}_L}{\psi} \leq \frac{\gamma(\bar{a} - a_H)^2}{\gamma + \bar{\lambda} + a_H} \left[1 + \frac{\hat{\gamma} + \beta}{\bar{\lambda} + a_H} \right], \quad (10)$$

where a_H is from (5). The right-hand side is increasing in β and \bar{v} , decreasing in $\bar{\lambda}$ and θ .

The left-hand side of (10) is easy to interpret: a Prime Minister finds protection worthwhile when scandals are not too painful ($\bar{w}_H - \bar{w}_L$ is not too large) and when activism is important (ψ is high). The right-hand side, however, yields more subtle insights. When β is high, tainted ministers recover quickly and hence a limited amount of protection is not too costly. When $\bar{\lambda}$ is large, scandals arrive more quickly and hence the costly act of protection must be taken more often. In summary, a Prime Minister will be more willing to offer protection when ministers are less likely to be hit by scandal and when they find it easy to recover.

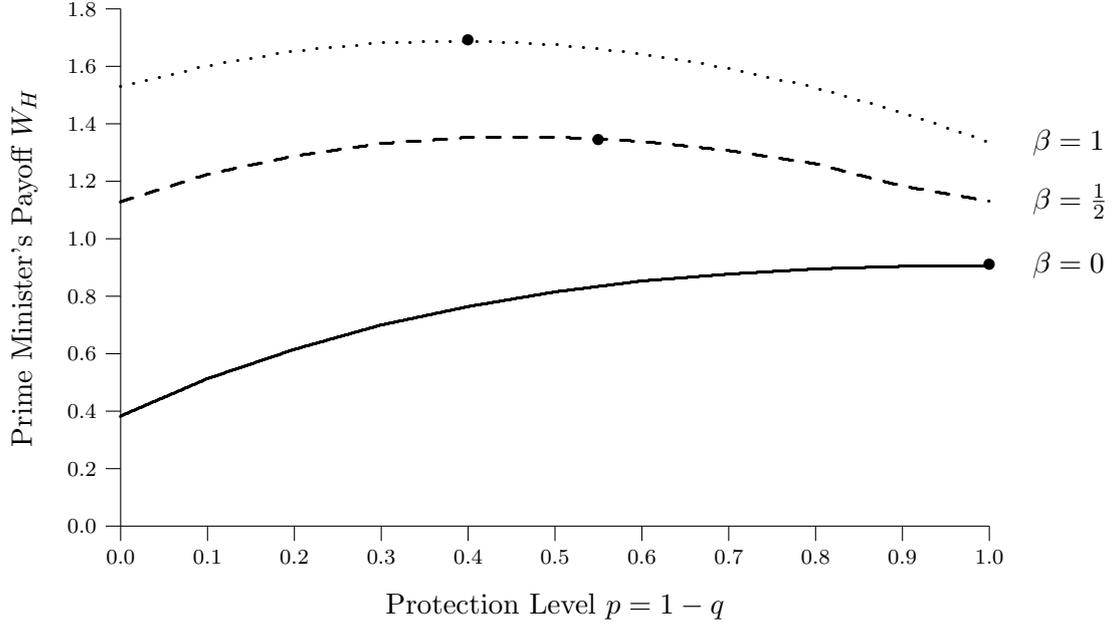
4.3. Protection and Recovery in Equilibrium. Proposition 4 evaluates the effect of an increase in protection at $p = 0$; that is, it gives us insight into the introduction of a

limited protection policy. When $p > 0$, however, the Prime Minister will sometimes endure the presence of tainted ministers in her cabinet. This means that the activism a_L of such ministers will be important. Given that this is so, factors (ii) and (v) discussed in the previous subsection become important; both of these factors work against an increase in protection. For this reason, the results of Proposition 4 can be overturned.

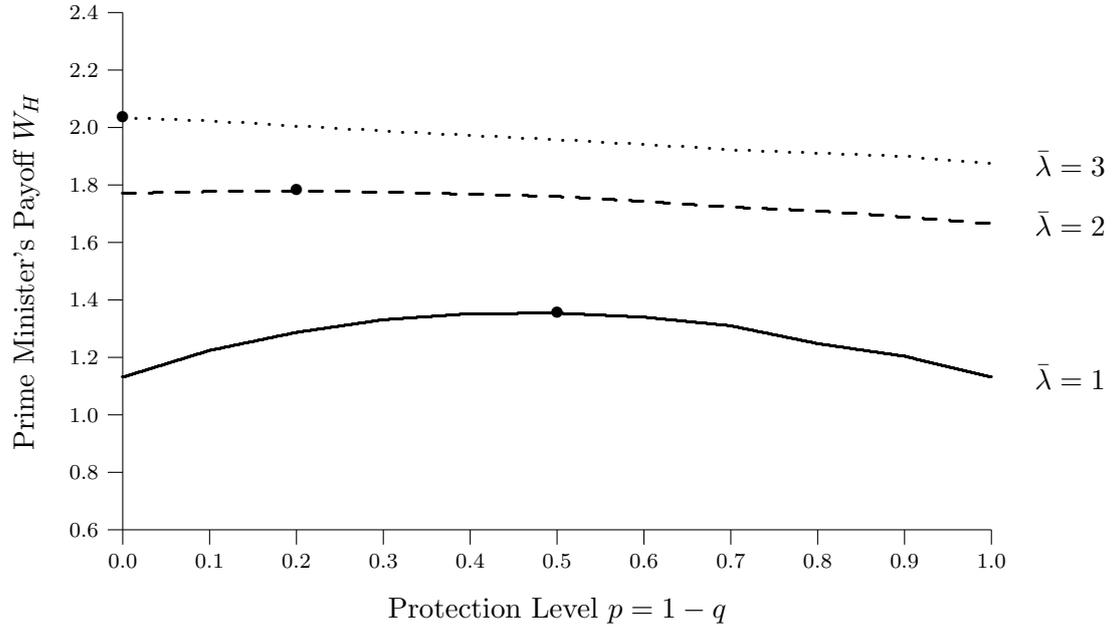
To illustrate this, we study numerical examples. Figure 1(a) plots W_H on protection for different values of β . The comparative statics are surprising: the optimal level of protection is in fact decreasing in β ; indeed, for this specification, full protection is optimal when β is low. Evaluating the income effect on a tainted minister provides the correct intuition. An increase in recovery enhances the value of a tainted minister's position; a_L decreases and hence so does $\lambda(a_L)$. One implication is that fewer tainted ministers exit the cabinet under the "two strikes" rule. We see then that recovery increase the relative cost of protection and, as such, the overall income effect of an increase in β drives down the level of protection.

This comparative static highlights the dilemma which the Prime Minister faces when she has only one instrument, protection, available to her. She would like her clean ministers to be policy active since, dependent on ψ , she benefits directly from such activism. However she needs to ensure that too many ministers with clean reputations do not become scandalised. Lowering protection offsets the positive effect which an increase on recovery has on the activism of clean ministers. With tainted ministers the Prime Minister has the opposite concern. At the equilibrium protection level an increase in recovery reduces the policy activism of tainted ministers. These ministers are in effect "sitting ducks" who will sit tight in the hope that they recover from the scandal which has beset them. Thus an increase in recovery requires a corresponding decrease in protection to offsets this sitting-duck effect. Of course, the Prime Minister will not be overly concerned about the higher activism of tainted ministers since, under the two-strikes rule, these ministers can be replaced whilst maintaining an optimal protection policy for the cabinet as a whole.

Turning to the baseline hazard term $\bar{\lambda}$, the intuition behind Proposition 4 is that, as the exogenous hazard rate increases, more ministers become tainted and the level of ministerial protection will be lower. However, an increase in $\bar{\lambda}$ leads to an increase in a_L . This again is due to an income effect: it reduces the value of a ministerial career and increases a_L in line with the "live for today" attitude. This provides a reinforcing increase in the arrival of scandals when a minister is tainted. Hence, tainted ministers are more active and leave the



(a) The Effect of Recovery



(b) The Effect of the Background Risk

These figures employ the same basic specification. The arrival rate of scandals satisfies $\lambda(a) = \bar{\lambda} + a$. The minister's preferences satisfy (4), $v_H(a) = v_L(a)$, $\bar{a} = 1$, $\bar{v} = 2$ and $\theta = 1$. Similarly, the Prime Minister's payoffs of the quadratic form (9) satisfying $\bar{w}_H - \bar{w}_L = 1/2$ and $\psi = 6$. Both the Prime Minister and a cabinet member share the same discount rate $\gamma = \hat{\gamma} = 8/10$. For Figure 1(a) we set $\bar{\lambda} = 2$, and for Figure 1(b) we set $\beta = 1/2$. For both figures, a bullet “•” indicates the approximate optimal choice of p .

FIGURE 1. The Counter-Intuitive Response of Protection

cabinet more quickly. This reduces the cost of increased protection, and hence the Prime Minister is able to induce higher levels of activism from clean ministers.

5. CREDIBILITY

So far we have assumed that the Prime Minister can credibly commit to her protection policy, and so losses due to inactivity may be offset by increasing protection. In dynamic settings, where time-inconsistent preferences preclude commitment, reputation may play a role. The existence of a multi-member cabinet may generate a concern for reputation such that the Prime Minister is able to credibly commit to her policy.⁷ Were the Prime Minister to defect from a stated policy then this defection is observed by all of her ministers; thus the Prime Minister faces sacrificing her reputation not only with regard to the individual minister concerned but with her entire cabinet.

5.1. Credibility in a Multi-Member Cabinet. To identify the effect of a multi-member cabinet, we suppose that, if the Prime Minister deviates from her stated protection policy, then all ministers act, from then on, as if the Prime Minister automatically fires any transgressing ministers. Another way of saying this is that a single deviation from a stated protection policy leaves the Prime Minister’s reputation, with regard to protecting her ministers, in tatters. Following a deviation, clean ministers will employ an activism level \tilde{a} which is the level of activism were no protection available. Formally, this is the activism level that generates the solution to (3); for the specification (4) this would follow from the explicit solution (5) given by Proposition 3. Since, following a deviation, the Prime Minister is no longer constrained to maintain a good reputation, we assume that upon deviating once only the Prime Minister reverts to a “keep it clean” regime, firing all incumbent ministers who are tainted and firing also all ministers who subsequently become tainted.

We write the present discounted value of the relationship between the Prime Minister and a minister in her cabinet at the start of this reversionary phase as $\tilde{W} = w_H(\tilde{a})/\hat{\gamma}$. For the Prime Minister to be able to credibly commit to her protection policy it must be the case that the Prime Minister would rather retain a minister who has become tainted than to let the minister go. The credibility constraint is simply $W_L \geq \tilde{W}$.

One might think that as the cabinet’s size increases reputation effects will be binding. As the number of ministers increases, the loss of policy activity which the Prime Minister faces due to a deviation acts as a disincentive toward renegeing on the protection policy. To see

⁷This ensures that implicit contracts are self-enforcing in the sense of MacLeod and Malcomson (1988, 1989).

this argument, let us suppose that the Prime Minister begins with an entirely clean cabinet, worth nW_H to her. Given that a scandal arrives, and she is called to protect her minister, her payoff falls to $(n-1)W_H + W_L$. If she were to deviate, hence destroying her reputation with all cabinet members, then the entire cabinet will expect a squeaky clean protection regime, and the Prime Minister's payoff will be $n\tilde{W}$. This means that the Prime Minister will not deviate so long as $(n-1)W_H + W_L \geq n\tilde{W}$, or equivalently $(n-1)(W_H - \tilde{W}) \geq \tilde{W} - W_L$. Thus, so long as the temptation to abandon her scandalised minister (that is, $\tilde{W} - W_L$) is lower than the loss of reputation with other ministers (reflected by $(n-1)(W_H - \tilde{W})$) the Prime Minister will not renege. When n is large, or so the story goes, the Prime Minister may credibly maintain her promise to protect.

This argument, however, works only when the cabinet contains a single tainted minister. If $p > 0$, there is positive probability that a situation will arise in which all cabinet ministers are tainted. When this is so, the Prime Minister faces a large incentive to deviate from her protection policy and, if $nW_L < n\tilde{W} \Leftrightarrow W_L < \tilde{W}$, she will do so. Therefore, if and only if, $W_L \geq \tilde{W}$ can the Prime Minister credibly commit to a protection policy when all ministers are tainted. Given the protection policies outlined in the paper, we obtain the following result.

Proposition 5. *The existence of a multi-member cabinet of identical ministers does not allow the Prime Minister to make a credible commitment to protection, when no such commitment could be made in the absence of such a cabinet.*

Although the explanation is straightforward, the result is nevertheless surprising. A large cabinet does not in and of itself produce the desired reputation effect which would allow the Prime Minister to credibly protect her ministers. We now turn to the case where there is a multi-member cabinet consisting of heterogenous ministers. We illustrate the effect of heterogeneity with a specific two-minister example using our numerical specifications.

5.2. Credible Commitment with Heterogenous Ministers. In the previous section we have shown that, where the Prime minister is involved in n bilateral relationships with homogeneous ministers, a concern for her reputation does not allow her to credibly commit to her protection policy. We now explore whether these reputation effects are present when allowing for heterogeneity between ministers. Such heterogeneity occurs if, for example, the penalty which the Prime Minister incurs due to the inactivity of one minister is lower or higher than that incurred for another. Alternatively we might think of the recovery rate for

one minister being lower or higher than for another minister, due perhaps to the relative seriousness of the scandals in which they are involved.

To keep things simple we focus on the case where the cabinet consists of two members i and j . Since each minister is purely concerned with the activity in his own department (we are assuming that protection policies are applied in a bilateral manner) we need specify two activism levels as before; these are now indexed by the minister's identity yielding a_{Hi} , a_{Li} and a_{Hj} , a_{Lj} . We illustrate the role of reputation in this example by allowing a single exogenous parameter β to vary by minister. Correspondingly we set $\beta_i = 0$ and $\beta_j = \frac{1}{4}$ whilst allowing the endogenous level of protection, p_i and p_j , to vary. To impose heterogeneity upon the cabinet we assume that minister i can only be replaced by a minister who is identical to i and similarly minister j can only be replaced by a minister who is identical to j . The Prime Minister's flow payoff is the sum of flow pay-offs obtained from the activism of each of her ministers. We write W_{Hi} and W_{Li} as the value contribution of minister i in the clean and tainted states respectively, and similarly write W_{Hj} and W_{Lj} .⁸

For our numerical specifications we set $\psi = 6$, and $\bar{w}_H = \bar{w}_L - \frac{1}{4}$ and, with regard to the minister's problem we set $\theta = 1$, $\bar{a} = 1$, $\bar{\lambda} = 1$ and $\bar{v} = 2$. In addition we set the discount rates at $\gamma = \hat{\gamma} = \frac{8}{10}$. The value functions are plotted in Figure 2 which in addition show the values \tilde{W}_i and \tilde{W}_j were the Prime Minister to renege on her protection policy and enter a squeaky clean regime.

When no recovery is available an increase in protection has no effect on factor (ii) identified above: there is no income effect of protection on tainted ministers. Neither does an increase in protection have an effect on factor (v) identified above: since tainted ministers continue to put in the same levels of activism as when no protection is offered, increasing protection has no effect upon the frequency with which the Prime Minister operates the "two strikes" rule. As shown in Proposition 4, absent these effects, an increase in protection feeds through

⁸For these values of β the contribution of minister i in this cabinet is

$$\begin{aligned}\hat{\gamma}W_{Hi} &= \frac{w_H(a_{Hi})(\hat{\gamma} + \lambda(a_{Li})) + w_H(a_{Li})p_i\lambda(a_{Hi})}{\hat{\gamma} + p_i\lambda(a_{Hi}) + \lambda(a_{Li})}, \quad \text{and} \\ \hat{\gamma}W_{Li} &= \frac{w_H(a_{Hi})(\lambda(a_{Li})) + w_L(a_{Li})(\gamma + p_i\lambda(a_{Hi}))}{\hat{\gamma} + p_i\lambda(a_{Hi}) + \lambda(a_{Li})},\end{aligned}$$

whereas the payoff contribution of minister j is

$$\begin{aligned}\gamma W_{Hj} &= \frac{w_H(a_{Hj})(\gamma + \frac{1}{2} + \lambda(a_{Lj})) + w_H(a_{Lj})p_j\lambda(a_{Hj})}{\gamma + \frac{1}{2} + p_j\lambda(a_{Hj}) + \lambda(a_{Lj})}, \quad \text{and} \\ \gamma W_{Lj} &= \frac{w_H(a_{Hj})(\frac{1}{2} + \lambda(a_{Lj})) + w_L(a_{Lj})(\gamma + p_j\lambda(a_{Hj}))}{\gamma + \frac{1}{2} + p_j\lambda(a_{Hj}) + \lambda(a_{Lj})}.\end{aligned}$$

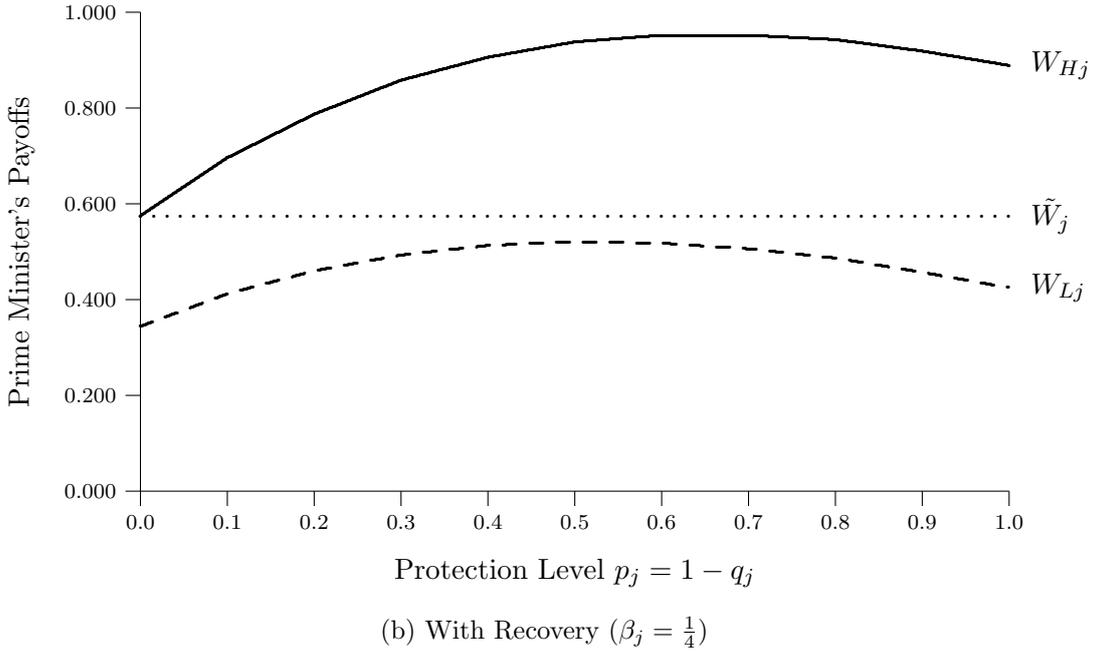
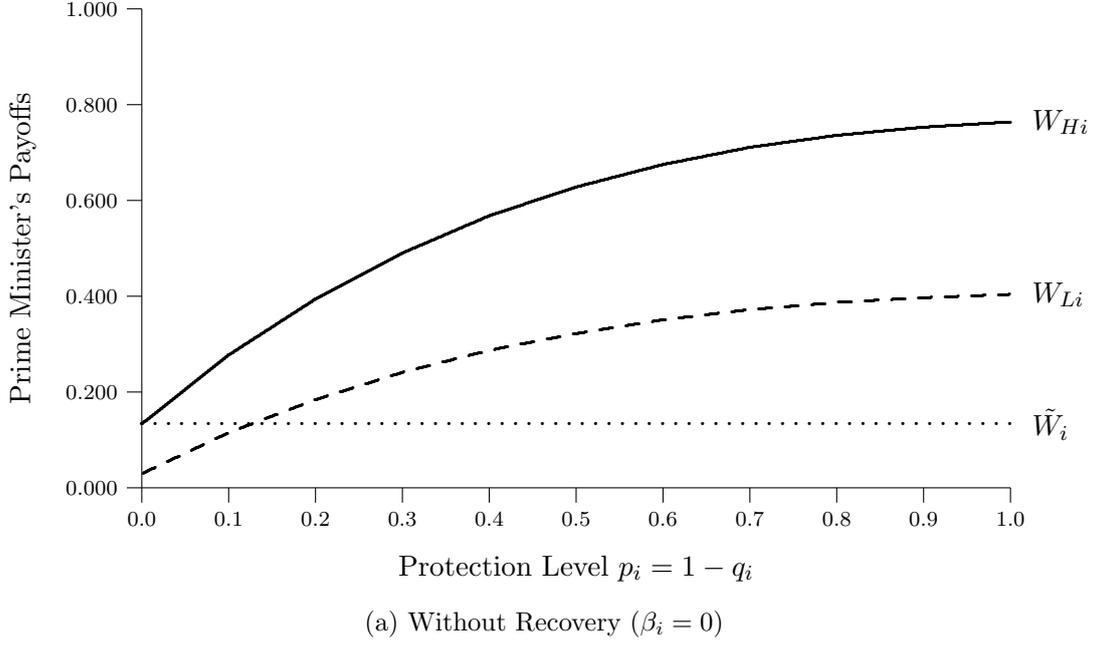
into an increase in W_H at $p = 0$ through its effect on a_H . For the parameter values used in Figure 2 an increase in protection also feeds into an increase in W_L . This latter effect is due to the increase in value of a tainted minister's replacement, should the tainted minister fall under a second strike. Indeed, for the parameter values used in Figure 2, when no recovery is available $\frac{dW_H}{dp} > 0$ and $\frac{dW_L}{dp} > 0$ for all values of p .

Note that at low levels of protection W_{Li} is less than \tilde{W}_i . For these low levels of protection the benefits of an increase in a_H are not enough to offset the cost $\bar{w}_H - \bar{w}_L$, thus the Prime Minister cannot credibly commit to low levels of protection. This is no longer the case for higher levels of protection; indeed we observe that full protection is not only optimal when no recovery is available, it is also credible. Indeed if the cabinet consisted only of minister i , or if minister j were identical to i , the offer of any level of protection greater than $p = 0.15$ would be credible.

In our example with heterogenous ministers, however, the cabinet contains minister j who has a higher recovery rate. Note that for minister j protection pays only when he is in the clean state, since $W_{Hj} > \tilde{W}_j$. Once minister j is tainted, protection is more costly than firing since W_{Lj} always lies below \tilde{W}_j . Thus if the cabinet consisted only of minister j , or if minister i were identical to minister j , any offer of protection would lack credibility. We now ask whether the existence of a cabinet which contains minister i , who has a lower recovery rate, enables the Prime Minister to extend a credible commitment of protection to minister j who has a higher recovery rate.

Given the difference between the two ministers, the Prime Minister would like to offer full protection to minister i and a lower level of protection for minister j . Interestingly, the Prime Minister seeks to protect the minister who is less likely to recover from scandal. With no recovery available for minister i , the Prime Minister must use her protection policy to induce higher levels of policy activism from that minister.

We start our analysis when both ministers are free of scandal. From Figure 2 we observe that, in this state, the Prime Minister would clearly offer full protection $p_i^* = 1$ to minister i and would offer minister j a level of protection of approximately $p_j^* = 0.6$. This level of protection maximises the Prime Minister's pay-off when j is clean and minimises the cost of protecting him in the event of a scandal. Suppose that minister i is hit by a scandal. The benefit to the Prime Minister from the protection policy is the current discounted value W_{Li} plus W_{Hj} . If she instead reneges on the proposed level of protection and fires minister i she receives the current discounted value of \tilde{W}_i plus \tilde{W}_j . From Figure 2 we observe that the



These figures continue the specification in which $\lambda(a) = \bar{\lambda} + a$ with $\bar{\lambda} = 1$ and minister's preferences satisfy (4), $v_H(a) = v_L(a)$, $\bar{a} = 1$, $\bar{v} = 2$ and $\theta = 1$. Similarly, the Prime Minister's payoffs of the quadratic form (9) satisfying $\bar{w}_H - \bar{w}_L = 1/4$ and $\psi = 6$. Both the Prime Minister and a cabinet member share the same discount rate $\gamma = \hat{\gamma} = 8/10$.

FIGURE 2. Achieving Credibility with a Multi-Member Cabinet

inequality

$$W_{L_i} + W_{H_j} \geq \tilde{W}_i + \tilde{W}_j$$

is satisfied so that, when j is clean and i is tainted, the commitment to p_i^* and p_j^* is credible.

Suppose that, instead of minister i it is minister j who is hit by scandal when previously both ministers had been clean. Although $W_{H_i} > \tilde{W}_i$ it is also the case that $W_{L_j} < \tilde{W}_j$. Were she to renege on protecting minister j , the Prime Minister stands to gain \tilde{W}_j whilst losing only W_{L_j} . Clearly, if the Prime Minister considered her relationship with minister j in isolation, she would wish to renege on any level of protection and so any commitment is non-credible. However, in a heterogenous cabinet the Prime Minister must take into account the effect of her action with respect to minister j upon her relationship with minister i . Indeed were she to renege on protecting j she stands not only to gain the current discounted value of $\tilde{W}_j - W_{L_j}$ but to lose $W_{H_i} - \tilde{W}_i$. From Figure 2 we observe that

$$W_{H_i} - \tilde{W}_i \geq \tilde{W}_j - W_{L_j}$$

holds so that when i is clean and j is tainted, the commitment to p_i^* and p_j^* is credible.

Clearly the biggest incentive for the Prime Minister to defect occurs when both ministers are tainted. Consider the case where minister i is tainted and j is hit by a scandal. Following the reasoning above we need only check that the gain from defection with respect to minister j , which in this case is $\tilde{W}_j - W_{L_j}$, is smaller than the cost of defection with respect to minister i , which in this case is $W_{L_i} - \tilde{W}_i$. Similarly in the case where where minister j is tainted and minister i becomes tainted also, for commitment to be credible it must also be the case that the gain from defection with respect to minister j is smaller than the cost of defection with respect to minister i . In fact we observe from Figure 2 that the required inequality $W_{L_i} - \tilde{W}_i \geq \tilde{W}_j - W_{L_j}$ is indeed satisfied. We see then that when minister i is tainted and minister j becomes tainted also, or when j is tainted and i become tainted also, the commitment to protection levels p_i^* and p_j^* is credible.

The effect of introducing heterogeneity into a multi-member cabinet is that the Prime Minister will show concern for the net effect of her actions upon the level of activism of the cabinet as a whole. Surprisingly we find that, the inclusion of minister i who has a lower rate of recovery allows the prime minister to credibly commit in a cabinet including minister j who has a higher rate of recovery. Note that, although the Prime Minister can credibly commit to her policy of p_i^* and p_j^* , she cannot commit to any level of protection. Hence the

Prime Minister's ability to protect ministers from resignation calls is limited by her incentive to maintain credibility.

6. CONCLUDING REMARKS

We have explored how a Prime Minister may use the hiring and firing of ministers, to pursue her political objectives. Both she and her ministers are keen to be policy active. Such activism, however, exposes ministers to the risk of resignation calls due to policy failures, and subsequent unpopularity. Ministers, therefore, face a moral-hazard problem: they will shy away from activism in order to avoid the scandals that would lead to the loss of their jobs. We have focused on the role of the Prime Minister in protecting her ministers from such consequences of their policy activism. A protection policy can provide the correct incentives for cabinet ministers to be policy active, whereas the absence of such a policy may lead to overtly risk-averse behaviour on the ministers part.

We view this aspect of the relationship between the Prime Minister and her executive as a crucial factor in maintaining the value of a ministerial career. As such our model fits into a broader literature which examines the effect of institutions on the quality of the political elite. As noted by Caselli and Morelli (2004), a preponderance of a "bad politicians" affects the value of a political career such that talented candidates exempt themselves from public life. Besley and Case (1995) have looked at the effect of elections as institutional mechanisms which can mitigate against this affect. Whilst Dal Bó and Di Tella (2003) have focused on the role of political parties as a means of protection for "good politicians". Our model is the first which we know of which formally analyses the hiring and firing decisions which are made by the chief of the executive and its effects on the value of a political career.

In focusing upon the effect of the protection policy on the value of a ministerial career, we reached some surprising results. In our model the preferences of the Prime Minister and her ministers are aligned in that both desire higher levels of policy activism. However, whereas the promise of protection enhances the activism of those who are free from scandal, the same promise encourages tainted ministers to sit tight. This is due to the income effect of a minister's concern for his future career. Anything that increases the value of a career will make a minister more sensitive to the loss of his job. A protection policy will do just that. In contrast, a shorter expected job tenure will focus a minister's attention on the short run, providing an incentive to "live for today" and increase policy activism. Thus, ministers who

suffer from an exogenously higher risk of scandal or who have been exposed to scandal in the past and have little chance of recovery prove to be more likely to be policy active.

This insight sheds light onto two issues. First, we observe that some ministers appear to be dramatically more exposed to scandals than others. Most commentators attribute this to personality traits of the ministers involved. The income effect demonstrates that only a small tendency toward scandal can lead to greater exposure. The initial tendency leads to a shortened expected tenure, and thus increased political activism, reinforcing a minister's exposure to scandals and subsequent resignation. Second, a widely held view is that the incumbents of some departments have a higher hazard rate than incumbents of others.⁹ The income effect can provide new insights here. If the incumbent in a department is policy active, then his successor faces an increased risk of subsequent policy failures. Given that the initiatives of his predecessor may come back to haunt him, the successor faces a lower expected tenure and adopts a "live for today" attitude by hastening the implementation of policy reforms. In summary, we expect a department's reputation for policy activism and the associated policy failures to be self-reinforcing.

The income effect also illuminates the Prime Minister's protection policy, which may vary with other parameters in surprising ways. An increase in the ability of ministers to recover from scandal decreases the optimal level of protection which is offered. The protection increases with an minister's exogenous exposure to scandal. Our explanations highlight the effects of the protection policy on the transition rates between the minister's states. For example, since recovery increases the activism of clean ministers and decreases that of tainted ministers the Prime Minister is concerned with what we call the "sitting duck" effect.

We have also provided a new rationale for cabinet governance. By modelling the cabinet as a set of independent relationships between the minister and the Prime Minister we are able to identify the effect of a political cabinet. Krehbiel (1993), famously, queried how the world would look if, instead of being organised into political parties, legislators simply acted according to their preferences; thus he challenged political scientists to find evidence of "partisan" behaviour. We ask a similar question of the role of cabinets with regard to the relationship between ministers and the Prime Minister: does the existence of a cabinet lead to behaviour which would be different to that which would be observed in the absence of such a cabinet? The role of a cabinet hinges upon the fact that the Prime Minister's

⁹For example, the British Home Office is often seen as a ministerial graveyard with many promising political careers having come to a premature end there, due to failed policy initiatives. Most commentators treat this effect as a structural feature of the British cabinet system of government.

protection policy may suffer from a lack of credibility, due to a short-term incentive to boost poll ratings by firing a tainted minister. Thus the existence of a multi-member cabinet may help her to keep her promises.

This issue is somewhat subtle, in that the existence of a multi-member cabinet does little to establish credibility in of and by itself. Instead, the cabinet system is of use when the ministerial team is heterogeneous. This aspect of our model is a straightforward application of the multi-market contact idea (Bernheim and Whinston, 1990) which has, so far, received little attention in the political science arena.¹⁰ Drawing upon these ideas from the study of industrial organisation we offer an alternative to the traditional view of the cabinet, which is that it acts as a check on the policy ambitions of individual ministers (Palmer, 1995).

The institutional setting for our model does not take into account the partisan composition of the governing coalition.¹¹ Neither do we consider here the effects of interaction between ministers in cabinet government.¹² In particular we do not consider how the scandals of other ministers may affect activism and subsequent protection levels. Whilst these elements do not figure in our model, we do think that the key effects to which we draw attention, namely the importance of income effects when considering the Prime Minister's protection policy and the role of the cabinet in enforcing protection, are relevant when considering these alternative institutional frameworks.

APPENDIX A. OMITTED PROOFS

Proof of Lemma 1. γV_H must weakly exceed $v_H(a) - \lambda(a)[V_H - pV_L]$ for each $a \geq 0$, hence

$$\gamma V_H \geq v_H(a_L) - \lambda(a_L)[V_H - pV_L] \geq v_L(a_L) - \lambda(a_L)[V_H - pV_L],$$

where the second inequality follows from the maintained assumption that $v_H(a) \geq v_L(a)$. Combining this with the equality $\gamma V_L = v_L(a_L) - \lambda_L(a_L)V_L + \beta[V_H - V_L]$ we obtain

$$\gamma[V_H - V_L] \geq \lambda_L(a_L)V_L - \beta[V_H - V_L] - \lambda(a_L)[V_H - pV_L],$$

which may be re-arranged to yield

$$[\gamma + \beta + \lambda(a_L)] \times [V_H - V_L] \geq \lambda(a_L)pV_L \geq 0,$$

¹⁰A notable exception is a recent paper by Stasavage and Guillaume (2002), who investigate conditions which help sustain monetary unions. They argue,

“In the case of international agreements, fear of losing the benefits from parallel agreements in the areas of trade, aid or security can dissuade even a government with strong preferences for looser monetary policy from exiting.” (p. 121)

This idea has been described as “linkage politics” by Lohmann (1997).

¹¹Diermeier and Merlo (2000), for example, look at the mid-term cabinet reshuffle as a means of reallocating, between the parties, the office benefits initially distributed at the start of a government term.

¹²Indridason and Kam (2005), for example, show that competition between ministers means that cabinet re-shuffles can be used to mitigate against overspending in a department.

which implies that $V_H - V_L \geq 0$, as desired. To ascertain the effect of the recovery rate β , take the left-hand equality from (1) and differentiate with respect to β ,

$$\begin{aligned} \gamma \frac{\partial V_H}{\partial \beta} &= \underbrace{\{v'_H(a_H) - \lambda'(a_H)[V_H - pV_L]\}}_{\text{zero from FOC}} \times \frac{\partial a_H}{\partial \beta} - \lambda(a_H) \left[\frac{\partial V_H}{\partial \beta} - p \frac{\partial V_L}{\partial \beta} \right] \\ &= -\lambda(a_H) \left[\frac{\partial V_H}{\partial \beta} - p \frac{\partial V_L}{\partial \beta} \right] \Rightarrow \frac{\partial V_H}{\partial \beta} = \frac{p\lambda(a_H)}{\gamma + \lambda(a_H)} \times \frac{\partial V_L}{\partial \beta}. \end{aligned}$$

This last equality implies that V_L is increasing in β if and only if V_H is so increasing. Next take the left-hand equality from (2) and differentiate with respect to β to obtain

$$\begin{aligned} \gamma \frac{\partial V_L}{\partial \beta} &= \underbrace{\{v'_L(a_L) - \lambda'(a_L)V_L\}}_{\text{zero from FOC}} \times \frac{\partial a_L}{\partial \beta} - \lambda(a_L) \frac{\partial V_L}{\partial \beta} + \beta \left(\frac{\partial V_H}{\partial \beta} - \frac{\partial V_L}{\partial \beta} \right) + V_H - V_L \\ &\geq -\lambda(a_L) \frac{\partial V_L}{\partial \beta} + \beta \left(\frac{\partial V_H}{\partial \beta} - \frac{\partial V_L}{\partial \beta} \right) \Rightarrow \frac{\partial V_L}{\partial \beta} \geq \frac{\beta}{\gamma + \beta + \lambda(a_L)} \times \frac{\partial V_H}{\partial \beta}, \end{aligned}$$

where the inequality followed from the fact that $(V_H - V_L) \geq 0$. Combining this inequality with the previously derived equality, we obtain

$$\frac{\partial V_L}{\partial \beta} \geq \frac{\beta}{\gamma + \beta + \lambda(a_L)} \times \frac{p\lambda(a_H)}{\gamma + \lambda(a_H)} \times \frac{\partial V_L}{\partial \beta}.$$

Observe that the first two terms on the right-hand side are both weakly positive and strictly less than 1. This means that the inequality cannot be satisfied if $\partial V_L / \partial \beta < 0$. We conclude that V_L is (weakly) increasing in β , and hence so is V_H . This establishes the second claim of the lemma. Finally, we turn to the third claim of the lemma. We take the left-hand equality from (1) and differentiate with respect to p :

$$\gamma \frac{\partial V_H}{\partial p} = -\lambda(a_H) \left[\frac{\partial V_H}{\partial p} - p \frac{\partial V_L}{\partial p} - V_L \right] \Rightarrow \frac{\partial V_H}{\partial p} \geq \frac{p\lambda(a_H)}{\gamma + \lambda(a_H)} \frac{\partial V_L}{\partial p}, \quad (11)$$

where we have used the envelope theorem, as before. Next we do the same for (2),

$$\gamma \frac{\partial V_L}{\partial p} = -\lambda(a_L) \frac{\partial V_L}{\partial p} + \beta \left(\frac{\partial V_H}{\partial p} - \frac{\partial V_L}{\partial p} \right) \Rightarrow \frac{\partial V_L}{\partial p} = \frac{\beta}{\gamma + \beta + \lambda(a_L)} \times \frac{\partial V_H}{\partial p}.$$

From this equality, if V_L is strictly decreasing in p then so is V_H , and moreover, $0 > \partial V_L / \partial p > \partial V_H / \partial p$. This is inconsistent with the previously derived inequality, and hence V_L must be weakly increasing in p . This, in turn, implies that V_H must be weakly increasing in p . \square

Proof of Lemma 2. Follows from arguments given in the main text. \square

Proof of Proposition 1. The first part of the proposition follows from the discussion in the text. The final part is the claim that $a_H \geq a_L$. To verify this claim, set $p = 0$ so that there is no protection. If $v_H(a) = v_L(a)$ then it is straightforward to verify that $V_H = V_L$ and $a_H = a_L$, since clean and tainted ministers are in the same situation. Setting $p > 0$ involves an increase in p , and hence a_H rises while a_L falls; this rules out $a_H < a_L$. \square

Proof of Proposition 2. Straightforward derivations ensure that both V_L and V_H are decreasing in $\bar{\lambda}$. Since $v'_L(a_L) = V_L$, this immediately implies that a_L increases with $\bar{\lambda}$, as claimed.

To show the effect on a_H , we take the equations $\gamma V_L = v_L(a_L) - \lambda(a_L)V_L + \beta(V_H - V_L)$ and $\gamma V_H = v_H(a_H) - \lambda(a_H)[V_H - pV_L]$, and differentiate with respect to $\bar{\lambda}$ to obtain

$$\begin{aligned}\gamma \frac{\partial V_L}{\partial \bar{\lambda}} &= -V_L - (\bar{\lambda} + a_L) \frac{\partial V_L}{\partial \bar{\lambda}} + \beta \left[\frac{\partial V_H}{\partial \bar{\lambda}} - \frac{\partial V_L}{\partial \bar{\lambda}} \right], \quad \text{and} \\ \gamma \frac{\partial V_H}{\partial \bar{\lambda}} &= -[V_H - pV_L] - (\bar{\lambda} + a_H) \left[\frac{\partial V_H}{\partial \bar{\lambda}} - p \frac{\partial V_L}{\partial \bar{\lambda}} \right].\end{aligned}$$

Straightforward but tedious manipulations then lead to the solutions

$$\begin{aligned}\frac{\partial V_L}{\partial \bar{\lambda}} &= -\frac{\beta[V_H - pV_L] + (\gamma + \bar{\lambda} + a_H)V_L}{(\gamma + \bar{\lambda} + a_H)(\gamma + \beta + \bar{\lambda} + a_L) - \beta p(\bar{\lambda} + a_H)}, \quad \text{and} \\ \frac{\partial V_H}{\partial \bar{\lambda}} &= -\frac{p(\bar{\lambda} + a_H)}{\gamma + \bar{\lambda} + a_H} \times \frac{\beta[V_H - pV_L] + (\gamma + \bar{\lambda} + a_H)V_L}{(\gamma + \bar{\lambda} + a_H)(\gamma + \beta + \bar{\lambda} + a_L) - \beta p(\bar{\lambda} + a_H)} - \frac{[V_H - pV_L]}{\gamma + \bar{\lambda} + a_H}.\end{aligned}$$

We seek conditions under which a_H decreases with $\bar{\lambda}$. Inspecting the first-order condition $v'_H(a_H) = V_H - pV_L$, this will be true if and only if $V_H - pV_L$ increases with $\bar{\lambda}$. That is,

$$\frac{\partial a_H}{\partial \bar{\lambda}} \leq 0 \quad \Leftrightarrow \quad \frac{\partial [V_H - pV_L]}{\partial \bar{\lambda}} \geq 0 \quad \Leftrightarrow \quad p \frac{\partial V_L}{\partial \bar{\lambda}} \leq \frac{\partial V_H}{\partial \bar{\lambda}}.$$

Following substitution and extensive algebra, this is true whenever

$$(\gamma + \beta(1 - p) + \bar{\lambda} + a_L)[V_H - pV_L] \leq p\gamma V_L. \quad (12)$$

This inequality must fail when p is small. To see this, note that (12) implies that

$$\gamma[V_H - pV_L] \leq p\gamma V_L \quad \Leftrightarrow \quad p \geq \frac{V_H}{2V_L} \geq \frac{1}{2}.$$

Hence, if $p < \frac{1}{2}$ then (12) must fail. This implies that for such lower levels of protection, the activity of a clean minister increases with λ . On the other hand, (12) can hold for higher levels of p . To see this, note that for $p = 1$ the inequality becomes

$$(\gamma + \bar{\lambda} + a_L)[V_H - V_L] \leq \gamma V_L.$$

Now, let β grow large, so that a tainted minister recovers rapidly. An inspection of the equation $\gamma V_L = v_L(a_L) - \lambda(a_L)V_L + \beta(V_H - V_L)$ confirms that $(V_H - V_L) \rightarrow 0$ as $\beta \rightarrow \infty$. Thus, for β sufficiently large and $p = 1$ (and, in fact, for p sufficiently close to 1) the left-hand side of (12) is close to zero, and hence the activism of a clean minister falls with $\bar{\lambda}$. \square

Proof of Proposition 3. Given (4), the value and first-order equations from (3) become

$$(\gamma + \bar{\lambda} + a_H)V_H = \bar{v} - \frac{\theta(\bar{a} - a_H)^2}{2} \quad \text{and} \quad \theta(\bar{a} - a_H) = V_H.$$

These two equations combine to eliminate V_H , and following re-arrangement

$$\frac{(\bar{a} - a_H)^2}{2} - (\gamma + \bar{\lambda} + \bar{a})(\bar{a} - a_H) + \frac{\bar{v}}{\theta} = 0.$$

Finding the appropriate root of this quadratic yields a solution for $(\bar{a} - a_H)$ and hence the displayed expression for a_H as given in the proposition. Checking to ensure that $a_H \geq 0$ leads, following appropriate algebraic manipulations, to $\bar{v} \leq 2\bar{a}\theta(\gamma + \bar{\lambda})$. \square

Proof of Lemma 3. Recall that $\lambda'(a) = 1$, differentiate (6) with respect to p to obtain

$$\hat{\gamma} \frac{\partial W_H}{\partial p} = \frac{\partial a_H}{\partial p} \times [w'_H(a_H) - p\lambda(a_H)(W_H - W_L)] - \lambda(a_H)(W_H - W_L) - p\lambda(a_H) \left[\frac{\partial W_H}{\partial p} - \frac{\partial W_L}{\partial p} \right].$$

If $p = 0$ then the final term of this equality disappears, and the claim in the lemma automatically holds by inspection. If $p > 0$, however, then the last term matters. To assess the last term, differentiate (7) with respect to p and set $\beta = 0$ to obtain

$$\begin{aligned} \hat{\gamma} \frac{\partial W_L}{\partial p} &= \frac{\partial a_L}{\partial p} \times [w'_L(a_L) + (W_H - W_L)] + (\beta + \lambda(a_L)) \left[\frac{\partial W_H}{\partial p} - \frac{\partial W_L}{\partial p} \right] \\ &= \lambda(a_L) \left[\frac{\partial W_H}{\partial p} - \frac{\partial W_L}{\partial p} \right] \\ \Rightarrow p\lambda(a_H) \left[\frac{\partial W_H}{\partial p} - \frac{\partial W_L}{\partial p} \right] &= \frac{\hat{\gamma}p\lambda(a_H)}{\lambda(a_L)} \times \frac{\partial W_L}{\partial p} = \frac{\hat{\gamma}p\lambda(a_H)}{\hat{\gamma} + \lambda(a_L)} \times \frac{\partial W_H}{\partial p}. \end{aligned}$$

The second equality follows from the fact that $\beta = 0$ and hence a_L (the activism of a tainted minister) is unaffected by protection, since he can never recover and benefit from such enhanced protection. The final statement follows from straightforward algebra. Substituting back in to the first equality of the proof,

$$\hat{\gamma} \left[1 + \frac{p\lambda(a_H)}{\hat{\gamma} + \lambda(a_L)} \right] \frac{\partial W_H}{\partial p} = \frac{\partial a_H}{\partial p} \times [w'_H(a_H) - p\lambda(a_H)(W_H - W_L)] - \lambda(a_H)(W_H - W_L).$$

An inspection yields the claim of the lemma. \square

Proof of Proposition 4. Activism a_H satisfies $v'_H(a_H) = \lambda'(a_H)[V_H - pV_L]$. Imposing the specification of (4), this becomes $\theta(\bar{a} - a_H) = [V_H - pV_L]$. Differentiating with respect to p ,

$$\frac{\partial a_H}{\partial p} = -\frac{1}{\theta} \frac{\partial [V_H - pV_L]}{\partial p} = \frac{\gamma}{\theta[\bar{\lambda} + a_H]} \frac{\partial V_H}{\partial p},$$

where the second inequality follows from (11) in the proof of Lemma 1. Evaluated at $p = 0$ and setting $\lambda(a_H) = \bar{\lambda} + a_H$, (11) from that proof also reveals that

$$\frac{\partial V_H}{\partial p} = \frac{[\bar{\lambda} + a_H]V_L}{\gamma + \bar{\lambda} + a_H} \Rightarrow \frac{\partial a_H}{\partial p} = \frac{\gamma V_L}{\theta[\gamma + \bar{\lambda} + a_H]} = \frac{\gamma V_H}{\theta[\gamma + \bar{\lambda} + a_H]} = \frac{\gamma(\bar{a} - a_H)}{\gamma + \bar{\lambda} + a_H},$$

where the penultimate equality follows from the fact that $V_L = V_H$ when $p = 0$ and $v_L(a) = v_H(a)$, and the final equality from substitution of $\theta(\bar{a} - a_H) = V_H$.

We are now ready to establish conditions under which the Prime Minister would indeed wish to protect a minister. When $p = 0$, we know that $a_L = a_H$. Imposing the specification (9), linearity of $\lambda(a)$, and the solution for $\partial a_H / \partial p$ calculated above, (8) becomes

$$\frac{dW_H}{dp} > 0 \Leftrightarrow \frac{\gamma(\bar{a} - a_H)^2(\hat{\gamma} + \beta + \bar{\lambda} + a_H)}{[\bar{\lambda} + a_H] \times [\gamma + \bar{\lambda} + a_H]} > \frac{\bar{w}_H - \bar{w}_L}{\psi}.$$

This yields (10). The left-hand side of this inequality can be written

$$\frac{\gamma(\bar{a} - a_H)^2}{\gamma + \bar{\lambda} + a_H} \left[1 + \frac{\hat{\gamma} + \beta}{\bar{\lambda} + a_H} \right].$$

By inspection this is decreasing in $\bar{\lambda}$ and a_H . Since a_H is increasing in $\bar{\lambda}$, this means that the expression above is indeed decreasing in $\bar{\lambda}$. It is increasing in β ; comparative statics with respect to θ and \bar{v} follow from the corresponding properties of a_H . \square

Proof of Proposition 5. Follows from arguments given in the main text. \square

REFERENCES

- BERNHEIM, B. D., AND M. D. WHINSTON (1990): "Multimarket Contact and Collusive Behavior," *RAND Journal of Economics*, 21(1), 1–26.
- BESLEY, T., AND A. CASE (1995): "Incumbent Behaviour: Vote-Seeking, Tax-Setting and Yardstick Competition," *American Economic Review*, 85(1), 25–45.
- CASELLI, F., AND M. MORELLI (2004): "Bad Politicians," *Journal of Public Economics*, 88(3–4), 759–82.
- DAL BÓ, E., P. DAL BÓ, AND R. DI TELLA (2004): "Plata o Plomo? Bribe and Punishment in a Theory of Political Influence," *Working Paper*.
- DAL BÓ, E., AND R. DI TELLA (2003): "Capture by Threat," *Journal of Political Economy*, 111(5), 1123–54.
- DEWAN, T., AND K. DOWDING (2005): "The Corrective Effect of Ministerial Resignations," *American Journal of Political Science*, 49(1), 46–56.
- DIERMEIER, D., AND A. MERLO (2000): "Government Turnover in Parliamentary Democracies," *Journal of Economic Theory*, 94(1), 46–79.
- DOIG, A. (1993): "The Double Whammy: The Resignation of David Mellor, MP," *Journal of Parliamentary Affairs*, 46(2), 167–91.
- HUBER, J., AND C. GALLIARDO (2004): "Cabinet Instability and Experience in the Cabinet: The French Fourth and Fifth Republic in Comparative Perspective," *British Journal of Political Science*.
- INDRIDASON, I., AND C. KAM (2003): "The Timing of Cabinet Reshuffles: An Event History Approach," *Annual Meetings of the American Political Science Association*.
- (2005): "Cabinet Reshuffles and Ministerial Drift," *Working Paper*.
- KREHBIEL, K. (1993): "Where's the Party," *British Journal of Political Science*, 23(2), 235–66.
- LOHMANN, S. (1997): "Linkage Politics," *Journal of Conflict Resolution*, 41(1), 38–67.
- MACLEOD, W. B., AND J. M. MALCOMSON (1988): "Reputation and Hierarchy in Dynamic Models of Employment," *Journal of Political Economy*, 96(4), 832–54.
- (1989): "Implicit Contracts, Incentive Compatibility, and Involuntary Unemployment," *Econometrica*, 57(2), 447–80.
- PALMER, M. (1995): "Towards an Economics of Comparative Political Organisation: Examining Ministerial Responsibility," *Journal of Law, Economics and Organisation*.
- STASAVAGE, D., AND D. GUILLAUME (2002): "When are Monetary Commitments Credible? Parallel Agreements and the Sustainability of Currency Unions," *British Journal of Political Science*, 32, 119–46.