

Cabinet Reshuffles and Ministerial Drift

INDRID I. H. INDRIDASON AND CHRISTOPHER KAM*

A model of policy implementation in a parliamentary democracy as delegation between the prime minister and her cabinet ministers is introduced. Cabinet reshuffles can be pursued as a strategy to reduce the agency loss which occurs due to the different preferences of the actors. This work thus explains why prime ministers resort to reshuffles: cabinet reshuffles reduce the moral hazard facing ministers. This answer both augments and distinguishes this work from traditional perspectives on reshuffles that have emphasized the deleterious effects of reshuffles on ministerial capacity, and also from recent work that casts reshuffles as solutions to the adverse-selection problems inherent in cabinet government. The conclusion offers a preliminary test of some of the hypotheses generated by this theory.

WHY DO PRIME MINISTERS RESHUFFLE THEIR CABINETS?

Parliamentary cabinets are subject to two types of instability. First, cabinets, coalition cabinets in particular, may undergo cycles of formation, collapse and reformation. Secondly, and less dramatically, cabinets may be reshuffled, ministerial portfolios being reallocated among members of the governing coalition. Cabinet instability of the first sort is commonly taken to signal political under-performance,¹ though this view is hardly unanimous.² A similar ambivalence surrounds cabinet reshuffles. Take, for example, the common argument that frequent reshuffles prevent ministers from developing the expertise and acumen needed to control a complex modern bureaucracy.³ On this view, reshuffles destroy the informational gains that prolonged ministerial tenure can bring, and in so doing undermine political (i.e., the cabinet's) control of the bureaucracy. The trouble with this argument is that it is not immediately obvious why prime ministers (PMs) would ever reshuffle their cabinets if the only effects were to be to undercut the cabinet's administrative capacity. Yet PMs do reshuffle their cabinets, and quite frequently at that.⁴ So why do PMs reshuffle their cabinets?

In answering this question, it is not enough to say that PMs reshuffle out of habit or tradition; an explanation of cabinet reshuffles must set out why PMs would want to reshuffle, that is, it must demonstrate how PMs benefit from reshuffles. One possible explanation is that reshuffles are responses to scandals or public opinion shocks, the PM

* Department of Politics & International Relations, University of Oxford; Department of Political Science, University of British Columbia, respectively. The authors wish to thank James Alt, Steve Ansolabehere, Rob Franzese, Ben Klemens, Arthur Lupia and anonymous referees for their useful comments and suggestions.

¹ Paul V. Warwick, *Government Survival in Parliamentary Democracies* (Cambridge: Cambridge University Press, 1994); G. Bingham Powell Jr, *Contemporary Democracies: Participation, Stability and Violence* (Cambridge, Mass.: Harvard University Press, 1982).

² See Arend Lijphart, *Patterns of Democracy: Government Forms and Performance in Thirty-Six Countries* (New Haven, Conn.: Yale University Press, 1999).

³ See, e.g., Bruce Headey, *British Cabinet Ministers: The Roles of Politicians in Executive Office* (London: Routledge, 1974); Richard Rose, 'The Making of Cabinet Ministers', *British Journal of Political Science*, 1 (1971), 394–414; Richard Rose, *Ministers and Ministries: A Functional Analysis* (Oxford: Clarendon Press, 1987).

⁴ For example, Christopher Kam and Indridi H. Indridason, 'The Timing of Cabinet Reshuffles in Five Westminster Parliamentary Systems', *Legislative Studies Quarterly*, 30 (2005), 327–63, find that cabinets in Australia, Britain, Canada, Ireland and New Zealand are reshuffled every eleven months on average.

sacking a scandal-ridden minister to restore public confidence in the government.⁵ On this view, reshuffles provide the PM with an electoral reward. The difficulty with this explanation is that it does not explain why PMs reshuffle even in the absence of scandal, or why, when a scandal does spark a reshuffle, the changes to the cabinet frequently extend beyond the removal and replacement of the tainted minister.⁶

We offer an alternative account of reshuffles, one that casts reshuffles as a response to the moral hazard inherent in the institutional arrangements of parliamentary government. Specifically, we argue that PMs use reshuffles to reduce the agency loss that results from delegating power to ministers and civil servants. Underpinning our argument is a view of politics in which cabinet ministers have inherently mixed motives, depending on their party's continued electoral success to stay in power, but having every incentive to use their departments to serve their own ambitions (for a more prestigious cabinet post, the leadership, etc.). Civil servants can hardly be expected to be indifferent to this situation, and we implicitly see civil servants taking advantage of their minister's ulterior motives to place the department's interests ahead of the cabinet's collective interest. We develop a formal model of cabinet reshuffles showing that PMs can use reshuffles to limit the agency loss generated by self-interested cabinet ministers and opportunistic civil servants. These results do not hinge on the PM's power to hire and fire ministers; they obtain even when reshuffles are restricted to rotating ministers among portfolios, and even when doing so is costly to the PM. In short, we reach the counter-intuitive conclusion that cabinet instability (or, less melodramatically, ministerial turnover) can be welfare-improving.

Our argument neither contradicts the traditional complaint that reshuffles undercut the accumulation of ministerial expertise nor denies that scandals may prompt reshuffles. It does, however, explain why PMs reshuffle their cabinets even when it is costly to do so, and even when their cabinets are free of scandal. Our focus on the moral hazard dimension of parliamentary government (i.e., the ex-post opportunism of elected leaders and bureaucrats) also stands in contrast to competing explanations of reshuffles that emphasize the adverse-selection problem of cabinet government, that is, the selection of 'good' ministers.⁷ This adverse-selection approach to reshuffles might mesh well with the accepted view that parliamentary government deals well with adverse selection but poorly with moral hazard,⁸ but we show that it suffers obvious empirical shortcomings that do not affect our model. In making the argument that reshuffles are tools that PMs use to control ministers, we are therefore challenging not only arguments that reshuffles are about recruiting political talent to cabinet, but also more general views about how and how well parliamentary government handles the delegation of power.

⁵ As in Torun Dewan and Keith M. Dowding, 'The Corrective Effect of Ministerial Resignations on Government Popularity', *American Journal of Political Science*, 49 (2005), 46–56, for example.

⁶ Take as an example the resignation of David Collenette from the Canadian cabinet on 4 October 1996. Collenette, the Minister of Defence, had phoned a judge regarding an ongoing case, in violation of the constitutional separation between the executive and judiciary. Collenette was forced to resign, but he was not simply replaced by a junior minister or backbencher. The prime minister, Jean Chretien, instead moved Doug Young, a senior minister from Human Resources to Defence, shifted Pierre Pettigrew from International Cooperation to Human Resources, and promoted Don Boudria from Chief Whip to Minister for International Cooperation.

⁷ For example, Torun Dewan and Keith M. Dowding, 'The Corrective Effect of Ministerial Resignations on Government Popularity', *American Journal of Political Science*, 49 (2005), 46–56; John D. Huber and Cecilia Martinez-Gallardo, 'Cabinet Instability and the Accumulation of Experience: The French Fourth and Fifth Republics in Comparative Perspective', *British Journal of Political Science*, 34 (2004), 27–48.

⁸ Kaare Strøm, 'Delegation and Accountability in Parliamentary Democracies', *European Journal of Political Research*, 37 (2000), 261–89.

This article proceeds in five parts. A brief literature review immediately follows this introduction. The next two sections flesh out the logic underpinning our model, the first section setting out an initial version of the model, the subsequent section altering the model so as to make reshuffles costly to the PM. Overall, our results suggest, firstly, that reshuffles limit agency loss providing that the PM exerts a modicum of oversight over cabinet ministers' activities and, secondly, that this result obtains even when reshuffling is costly to the PM. The fourth section of this article is empirical in nature, presenting evidence on the patterns of cabinet reshuffles in a variety of countries that challenges the notion that reshuffles are used to solve adverse-selection problems and comports with our assertion that reshuffles are used to combat moral hazard. The final section summarizes our findings and discusses the applicability of our model more generally.

A BRIEF LITERATURE REVIEW

The relationship between the executive and the bureaucracy is typically cast as a principal–agent relationship. These models generally assume a divergence in the preferences of the executive and the bureaucracy. Bureaucrats in these models tend either to take advantage of a multiple or alternating principal situation to implement policy independent of direct executive control or use their informational advantage and technical expertise to charge an excessive price for the goods they provide.⁹ Put succinctly, in these models the difference between the implemented policy and the 'democratically mandated' policy (i.e., the policy platform that the executive is elected on) is due to the executive's inability to control the bureaucracy. A common theme in this work, made explicit by Huber and Lupia, is that long ministerial tenure is necessary but not sufficient to ensure that the bureaucracy actually implements the policies that duly elected politicians (and presumably voters) want implemented.¹⁰

An alternative view of the principal–agent problem is presented by authors who write of ministers 'going native' (i.e., taking on their bureaucrats' aspirations) or conspiring with their bureaucrats in empire-building efforts (i.e., expanding the department's ambit or budget in ways that advance the minister's political career but do not enhance efficiency or conform to the cabinet's stated policies).¹¹ Downs and Crossman have written academic accounts of this phenomenon, Downs operating deductively from a rational choice framework, Crossman drawing inductively on his experience as a minister in the Wilson government.¹² Crossman, for example, talks of how quickly his civil servants isolated him, stifled his access to outside information, and guided him along a path most conducive to

⁹ For example, Mathew D. McCubbins, Roger G. Noll and Barry R. Weingast, 'Administrative Procedures as Instruments of Political Control', *Journal of Law, Economics and Organization*, 3 (1987), 243–77; John D. Huber and Arthur Lupia, 'Cabinet Instability and Delegation in Parliamentary Democracies', *American Journal of Political Science*, 45 (2001), 18–32; Kathleen Bawn, 'Political Control Versus Expertise: Congressional Choices about Administrative Procedures', *American Political Science Review*, 89 (1995), 62–73; Jean-Jacques Laffont and Jean Tirole, 'The Politics of Government Decision Making: A Theory of Regulatory Capture', *Quarterly Journal of Economics*, 106 (1991), 1089–127.

¹⁰ John D. Huber and Arthur Lupia, 'Delegation with Potentially Unstable Principals: How Coalition Termination Affects Bureaucratic Accountability in Parliamentary Democracy', *American Journal of Political Science*, 45 (1999), 18–32.

¹¹ For example, Anthony Downs, *Inside Bureaucracy* (Boston, Mass.: Little, Brown, 1967); Richard Crossman, *Diaries of a Cabinet Minister: Vol. 1: Minister of Housing, 1964–66* (London: Hamish Hamilton, 1975); Jean Blondel and Nick Manning, 'Do Ministers Do What They Say? Ministerial Unreliability, Collegiality and Hierarchical Government', *Political Studies*, 50 (2002), 455–76.

¹² Downs, *Inside Bureaucracy*; Crossman, *Diaries of a Cabinet Minister: Vol. 1*.

their interests,¹³ forcing him to guard against '[m]inistry policies ... being imposed on my own mind'.¹⁴ Crossman also comments on how his civil servants sought to strengthen his political stature precisely in order to advance the ministry's institutional interests.¹⁵

Implicit in Crossman's remarks is the notion that his civil servants were operating on the premise that their minister's political fortunes were at least partly independent of those of the government as a whole. This is an important insight because it suggests that ministers are not perfect agents of the cabinet or the PM, i.e., their preferences are not perfectly aligned. This is obvious when the PM and the cabinet minister are from different parties in a coalition.¹⁶ However, it remains true even in single-party governments. Certainly, cabinet ministers often have their own policy interests.¹⁷ They are also natural rivals to the PM – because the former has the leadership while many of the latter want it.¹⁸ Once one thinks of cabinet ministers in this fashion, a key difference between our approach and the existing literature on bureaucratic delegation emerges: whereas the latter sees delegation from the executive to the bureaucracy as the root of the principal–agent problem, we see delegation within the executive, that is, from the PM and cabinet to individual ministers, as being equally problematic.

This delegation of power from the PM and cabinet to individual ministers can be viewed in two ways. First, it could be considered an adverse selection problem in which the PM's task is to recruit ministers who are loyal, competent and who share the PM's policy preferences. Several existing models of reshuffles adopt this adverse selection approach, treating reshuffles as tools that PMs use to identify and select 'good' ministers and weed out 'bad' ministers (i.e. those who are incompetent, disloyal or ideologically incompatible).¹⁹ Alternatively, the PM's situation could be seen as a moral hazard problem. The PM's problem, on this view, is not a lack of information about a minister's loyalty or competence, but rather that all ministers have the motive and opportunity to use their portfolios in a manner that runs against the PM's interests. The PM must therefore manipulate the political environment in a way that undercuts ministers' incentives to engage in self-interested behaviour. Sacking or threatening to sack ministers is one means of doing this, but work in economics suggests that rotating agents among jobs – reshuffling ministers across portfolios in this context – can also limit agency loss.²⁰ The notion that

¹³ Crossman, *Diaries of a Cabinet Minister: Vol. 1*, p. 31, 614.

¹⁴ Crossman, *Diaries of a Cabinet Minister: Vol. 1*, p. 31.

¹⁵ Crossman, *Diaries of a Cabinet Minister: Vol. 1*, p. 43. This perspective is most vividly depicted in the sitcom 'Yes, Minister', in which the civil servants train and socialize a newly appointed minister, often trying to advance their minister's career so as to improve their own professional standing.

¹⁶ There is a growing literature dealing with delegation problems in coalition government, e.g., Georg Vanberg and Lanny Martin, 'Policing the Bargain: Coalition Government and Parliamentary Scrutiny', *American Journal of Political Science*, 48 (2004), 13–27; Michael F. Thies, 'Keeping Tabs on Partners: The Logic of Delegation in Coalition Governments', *American Journal of Political Science*, 45 (2001), 580–98.

¹⁷ E.g., Michael J. Laver and Kenneth A. Shepsle, eds, *Cabinet Ministers and Parliamentary Government* (Cambridge: Cambridge University Press, 1994); Blondel and Manning, 'Do Ministers Do What They Say?'

¹⁸ Gregory Luebbert, *Comparative Democracy: Policy Making and Governing Coalitions in Europe and Israel* (New York: Columbia University Press, 1986); Patrick Weller, 'Party Rules and the Dismissal of Prime Ministers: Comparative Perspectives from Britain, Canada, and Australia', *Parliamentary Affairs*, 47 (1994), 133–43.

¹⁹ E.g., John D. Huber and Cecilia Martinez-Gallardo, 'Cabinet Turnover in Parliamentary Democracies' (unpublished paper, 2003).

²⁰ Torun Dewan and David P. Myatt, 'Scandal, Protection, and Recovery in Political Cabinets', *American Political Science Review*, 101 (2005), 63–77; Anil Arya and Brian Mittendorf, 'Using Job Rotation to Extract Employee Information', *Journal of Law, Economics and Organization*, 20 (2004), 400–14; Jean Tirole, 'Hierarchies and Bureaucracies: On the Role of Collusion in Organizations', *Journal of Law, Economics and Organization*, 2 (1986), 181–214.

job rotation limits agency loss jibes with the fact that reshuffles consist more of sitting cabinet members exchanging portfolios than of incumbent ministers being displaced by neophytes,²¹ and, in view of this, this is how we approach reshuffles.

A MODEL OF CABINET RESHUFFLES

Motivating the Model

The potential for moral hazard on the minister's side springs from the fact that once the minister is assigned a particular portfolio the PM is limited (by time and resources) to detecting 'large' policy departures from the party platform. Cabinet ministers, however, face conflicting interests as we have implied above. On one hand, their fortunes are tied to their party for the simple reason that to become a cabinet minister one must belong to an electorally successful party. On the other hand, cabinet ministers harbour private desires, perhaps for a more important cabinet post (such as Finance or Foreign Affairs) or even the premiership itself. Such aspirations create competition among cabinet ministers, and make it difficult for the PM to maintain collective cabinet responsibility and ensure that the ministers remain faithful to the party's declared platform. Budget-maximizing bureaucrats almost certainly exacerbate this moral hazard problem because they have strong incentives to exaggerate to their ministers the private political benefits of certain policies – and there are various reasons why the minister himself is likely to view increased spending on his portfolio as beneficial. A bigger budget brings with it prestige, increased bargaining power at the cabinet table, greater opportunities for patronage and an ability to build a political constituency independent of both the party and the PM. Among members of the parliamentary party, the ability to secure large-scale funding may, in addition, suggest qualities such as persuasiveness or good bargaining skills – traits desirable in a future PM, perhaps.

All of these factors combine to generate tension within the cabinet, much of it revolving around the allocation of budgetary resources across portfolios. Each minister wants to spend as much as possible in their department – but this can distort the PM and cabinet's overall policy agenda. The PM cannot, for example, maintain a promise to cut the deficit whilst all her ministers simultaneously expand their departments' budgets.²² Moreover, if the annual budget is fixed, an expansion of spending in any one portfolio, say defence, reduces what can be spent in other portfolios, social welfare, for example. It is equally true that policy costs money. Without funding a minister has only plans not programmes. In this respect, there is tight link between departmental policies and departmental budgets: altering one alters the other. The cabinet minister thus faces a trade-off: he derives utility from adhering to his party's policy platform (which got him elected), but he also has incentives to bolster the budget of his ministry (which can, if he wishes, be used to advance his personal agenda) – and in this latter activity he is (if we believe Crossman's account and Downs's theorizing) guided, egged on and otherwise manipulated by the civil service. There is a real danger that the minister will succumb to these pressures and use their departmental budget to implement policies different from those decided on by the PM and

²¹ James E. Alt, 'Continuity, Turnover, and Experience in the British Cabinet, 1868–1970', in Valentine Herman and James E. Alt, eds, *Cabinet Studies: A Reader* (London: Macmillan, 1975), pp. 33–54.

²² For clarity we use male pronouns when referring to the cabinet ministers and female pronouns when referring to the PM.

the cabinet collectively. We refer to the difference between these two sets of policies as agency loss or, interchangeably, ‘ministerial drift’.

Ministerial Drift under Exogenous (Fixed) Reshuffle Regimes

Our aim is to demonstrate that PMs can use reshuffle to combat ministerial drift. We construct a game theoretic model of cabinet reshuffles and use it to compare the equilibrium behaviour of cabinet ministers under two types of regimes: (i) A ‘reshuffle regime’ where cabinet reshuffles occur and (ii) a ‘non-reshuffle regime’ where the cabinet is never reshuffled. This comparison shows that reshuffles have two effects. First, reshuffles may induce ministers to limit their spending. Secondly, reshuffles can prevent large deviations from the PM’s ideal policy in a portfolio. This is important in so far as large policy deviations are more likely to draw attention and, once discovered, cause greater damage to the PM and the cabinet.

Players. The game has three actors, two ministers, labelled M_1 and M_2 , and a PM (whose role at this stage of the analysis is passive).²³ There are two relevant policy dimensions each corresponding to a policy portfolio. One portfolio is held by Minister 1, the other, by Minister 2. An outcome of the game at time t is a policy denoted $x^t = (x_1^t, x_2^t) \in \mathbb{R}^2$ where the subscript denotes the portfolio. Let $x^* \in \mathbb{R}^2$ denote the PM’s, or the party leadership’s, most preferred policy. Whether the PM favours this policy because it corresponds to the platform the party was elected on, maximizes the party’s chance of re-election or is the PM’s ‘true’ policy preference is not important. We normalize, without loss of generality, the policy space so that the PM’s ideal policy equals $x^* = (0, 0)$. In keeping with our discussion above, we posit a particularly simple relationship between departmental spending and policy outcomes, to wit, that policy simply equals spending in a given portfolio. The nature of the relationship between spending and policy outcomes is not really a concern here as long as spending beyond some predetermined level moves policy away from the PM’s preferred position. In addition, we assume that a ministry’s budget changes incrementally, i.e., that last year’s budget forms the basis of this year’s budget negotiations. The extent to which last year’s spending influences this year’s spending does not have to be additive as we assume here; there only needs to be some amount that is carried over from one year’s budget to the next.

It is worth emphasizing that this one-to-one relationship between departmental budgets and government policy is simply an assumption that connects ministers’ actions to governmental policy in a transparent and tractable fashion. Our results do not hinge on the precise nature of this connection. Rather the key elements of the assumption are, first, that unauthorized ministerial action leads to a distortion of cabinet policy, and second, that ‘bad’ ministerial behaviour in the present enables ‘worse’ ministerial behaviour in the future. Any device that connects ministerial action to policy in this fashion could be employed. For example, we might have allowed ministers to make policy statements that depart from and hence distort the cabinet’s collective policy. We might also have assumed that such statements create precedents. In other words, if a minister is allowed to strike a policy line that is independent of the cabinet without being sacked, he may create a precedent that allows his successor in the portfolio to do the same. The link between

²³ Real-world cabinets are obviously much larger. However, limiting ourselves to a three-member cabinet reduces the complexity of our model and in no way limits its generality.

departmental budgets and policy seems less contrived and more realistic, however. It is one that is often made by political scientists and one that has currency among practising politicians.²⁴

Sequence of play. In the first period of the game M_1 and M_2 choose a policy to implement within their respective portfolios. Assume, without loss of generality, that the status quo policy equals $(0, 0)$.²⁵ Represent the ministers' policy choices by their spending, s_1 and s_2 , in their respective portfolios. (Note that the subscripts refer to the ministers rather than the portfolios throughout.) The resulting policy outcome in period 1 then equals $x^* + (s_1, s_2) = (s_1, s_2) = x^1$.

Following the ministers' spending decisions the cabinet is reshuffled depending on whether or not a reshuffle regime is in place. The reshuffle mechanism is denoted $r \in \{0, 1\}$, with $r = 1$ indicating that a reshuffle occurs. If a reshuffle takes place the ministers switch portfolios, i.e., M_1 now occupies portfolio 2 while M_2 occupies portfolio 1. This construction downplays whether the PM has strategic incentives to reshuffle (we consider this matter below), but it most clearly demonstrates how reshuffles influence policy outcomes.

In the second period of the game the ministers again choose a spending level in their current portfolio. As before, the ministers' actions correspond to the increase in the spending on their portfolios. Denote M_1 and M_2 's spending decisions in the second period as z_1 and z_2 . The second period policy outcome is the sum of spending on the portfolio in the two periods or $x^2 = (s_1 + (1 - r)z_1 + rz_2, s_2 + rz_1 + (1 - r)z_2)$. The sequence of play is depicted in Figure 1.

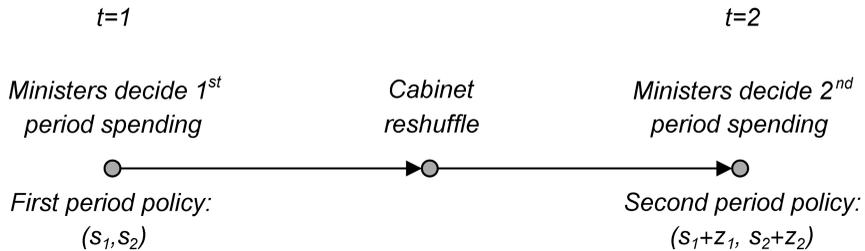


Fig. 1. Sequence of play

²⁴ E.g., Aaron Wildavsky, *The Politics of the Budgetary Process* (Boston, Mass.: Little, Brown, 1964); Michael Gallagher, Michael Laver and Peter Mair, *Representative Government in Modern Europe* (New York: McGraw-Hill, 1995); Dan B. Wood and Richard Waterman, 'The Dynamics of Political Control of the Bureaucracy', *American Political Science Review*, 85 (1991), 801–28. For example, when discussing the problems of taking over a newly developed portfolio, a former Canadian cabinet minister commented to us that achieving the government's policy objectives in the area 'would have been a hard task because the department had no budget, no real power ...' [Interjection: So a budget is very much power in Cabinet?] 'Oh yes, if you have programmes and a budget, you have power.' In his biography, John Major similarly equates departmental budgets with policies and, for that reason, he kept a watchful eye on the budget negotiations (John R. Major, *John Major: The Autobiography* (New York: HarperCollins, 1999), p. 99).

²⁵ Admittedly it is unrealistic to assume that the status quo policy at the beginning of the game is equal to the PM's ideal policy. The assumption is made for notational convenience and has no influence on the results below.

There are particular reasons why we assume ministers switch portfolios as opposed to being booted from the cabinet altogether. First, sacking or threatening to sack a minister is an altogether different weapon in the PM's arsenal and it is not difficult to imagine what its effects are. Secondly, reshuffles tend not to be comprised of mass firings and hirings. They tend instead to be dominated by lateral moves in which ministers exchange portfolios or exchange elements of their portfolios.²⁶ So to take a contrived example, the Labour minister might surrender oversight of workers' disability programmes to the Health minister but secure control of workplace health and safety regulation.²⁷ The issue at hand, then, is not whether ministers respond to threats of demotion (we imagine they do), but rather why ministers might be expected to alter their behaviour when confronted with the possibility of being moved laterally within the cabinet or having part of their portfolio transferred to another minister's department. Finally, limiting the reshuffle mechanism to the rotation of ministers among portfolios ensures that our results depend neither on threats of demotion nor the PM's ability to pick more competent (or more loyal or less ambitious) ministers.

Utility functions and payoffs. We are now in position to define the players' preferences more explicitly. As the PM is responsible for and judged on the performance of her cabinet as a whole, her payoff derives from her ability to co-ordinate her ministers in a way that secures the policy outcome promised to voters and desired by the governing party or coalition. Thus, even if the PM is primarily motivated by office or electoral concerns (i.e., by retaining the premiership or winning votes), these objectives are largely synonymous with implementing the policy x^* . The PM's preferences are therefore represented by a utility function, u_{PM} that is the sum of the squared Euclidean distances of the enacted policy from her ideal policy in the two periods:²⁸

$$u_{PM}(x^1, x^2) = -\|x^1\|^2 - \|x^2\|^2. \quad (1)$$

Recall, now, that the cabinet ministers have mixed motives. They derive utility not only from the cabinet's overall policy but also from increased spending on their portfolio. The ministers' ambition parameters, or their relative preference over cabinet policy and departmental spending, are denoted γ_i . Minister i 's preferences can then be represented by the utility function:

$$u_i(x^1, x^2) = -\|x^1\|^2 - \|x^2\|^2 + \gamma_i x_i^1 + (1-r)\gamma_i x_i^2 + r\gamma_i x_{\sim i}^2, \quad i = \{1, 2\}, \quad (2)$$

²⁶ It is equally true, of course, that ministers may be promoted to more powerful or higher-profile departments, such as finance and foreign affairs, or demoted to departmental backwaters. However, in the interests of simplicity and directness we abstract away from these political subtleties.

²⁷ Our model applies in a straightforward manner to situations where portfolios are 'divisible' as the portfolios in our model could simply be relabelled as policy areas. Thus, moving policy areas between portfolios has the same effect as moving ministers between portfolios. Of course, some complications arise if certain policy areas are more or less likely to be shuffled (e.g., it may be not be possible to remove budgeting from the Ministry of Finance). In general, ministers would be expected to focus their attention on policy areas that are less likely to be shuffled, but this would not fundamentally alter how the possibility of a reshuffle influences the ministers' calculus.

²⁸ An alternative formulation might weigh the outcomes in the two periods differently. First, it is possible that the PM discounts future payoffs and, secondly, the PM may value future policies more because of electoral concerns.

where the superscripts on x_i^1 and x_i^2 denote the total spending on portfolio i in periods 1 and 2. Expressed as a function of the players' actions the utility function is written:

$$u_i(s_1, s_2, r, z_1, z_2) = -\|(s_1, s_2)\|^2 - (1-r)\|(s_1 + z_1, s_2 + z_2)\|^2 - r\|(s_1 + z_2, s_2 + z_1)\|^2 + \gamma_i[s_i + (1-r)(s_i + z_i) + r(s_{\sim i} + z_i)], i = \{1, 2\}.$$

Thus, increased spending in a department distorts the cabinet's policy in that portfolio. We assume that there is a limit to this effect, however, such that in each period a minister can at most increase (or decrease) his spending by ω . Intuitively, we can think of spending increases in any given period greater than ω as raising red flags in the PM's office. Hence, ω represents the PM's oversight ability. Minister i 's spending decisions are thus constrained to $s_i \in [-\omega, \omega]$ and $z_i \in [-\omega, \omega]$.

Equilibrium outcomes. The proof starts from the observation that each minister has an ideal level of spending that depends on his level of ambition: the more ambitious the minister, the more he values departmental spending over party policy. This ideal level of spending can be shown to depend on the minister's ambition in a simple manner and equals $\gamma_i/2$ (see Lemma 1 in Appendix A). Thus, if the PM's oversight is especially weak (i.e., ω larger than $\gamma_i/2$), the minister spends $\gamma_i/2$ in the first period and nothing in the second. Rigorous oversight, in contrast, leads the minister to spend either (a) ω in each period, or (b) as much as possible in the first period, i.e., ω , and as much as necessary to achieve $\gamma_i/2$ in the second period. Both ministers follow this strategy and, consequently, in the absence of reshuffles the subgame perfect Nash equilibrium of the game leads to a policy outcome of $(\min \{2\omega, \gamma_1/2\}, \min \{2\omega, \gamma_2/2\})$. This policy outcome establishes a benchmark against which to measure the impact of reshuffles.

We seek to identify the conditions under which reshuffles induce at least one minister to spend less than he would otherwise, i.e., $\min \{2\omega, \gamma_i/2\}$. We refer to this equilibrium as a *ministerial restraint equilibrium*. A key step in identifying a ministerial restraint equilibrium is to recognize that reshuffles are not sufficient to constrain ministers' spending; a modest level of prime ministerial oversight is also necessary. The intuition here is simple: when the PM lacks the means to observe policy deviations, i.e., $\omega = \infty$, the ministers spend as much as they want in each period, they simply do so in different portfolios. Thus, in the absence of oversight, reshuffles alter the pattern of spending across the portfolios without changing the aggregate level of spending, and the equilibrium policy outcome remains $(\min \{2\omega, \gamma_1/2\}, \min \{2\omega, \gamma_2/2\})$. (See Lemma 2 in Appendix A.) Thus, reshuffles on their own do not improve the PM's welfare.

Reshuffles in combination with prime ministerial oversight, on the other hand, can support a ministerial restraint equilibrium. Proposition 1 states formally the conditions under which this occurs.

PROPOSITION 1. *The game has a ministerial restraint equilibrium if one of the following conditions is satisfied for some $i \in \{1, 2\}$:*

- (a) $\gamma_i < 2\omega$ and $\gamma_{\sim i} > \frac{(\gamma_i + 2\omega)}{\sqrt{2}}$,
- (b) $2\omega < \gamma_i \leq 6\omega$ and $\gamma_{\sim i} > \frac{\sqrt{-2\gamma_i^2 + 24\gamma_i\omega - 8\omega^2}}{2}$.

The equilibrium strategies are:

$$s_i^* = \begin{cases} \frac{\gamma_i - 2\omega}{4} & \text{if either condition is satisfied for } i \\ \min \left\{ \omega, \frac{\gamma_i}{2} \right\} & \text{else} \end{cases}$$

$$z_i^* = \min \left\{ \omega, \frac{\gamma_i}{2} - s_{\sim i} \right\}.$$

If i satisfies either condition then the equilibrium policy outcome in portfolio i equals

$$x_i^2 = \frac{\gamma_i + 2\omega}{4}.$$

Under the conditions set out in Proposition 1 at least one minister has an incentive to restrain his spending. The ministers do this because while they reap benefits from the spending that takes place in *their* portfolio, they incur (policy) costs from spending in *both* portfolios. Hence, when a reshuffle takes place, spending in the initial period by one minister enables the succeeding minister to achieve even higher levels of spending on the same portfolio in the next period (from which the erstwhile minister accrues no benefits). However, by spending less in the first period of the game, a minister can constrain his counterpart’s spending in the second period. The minister’s optimal first period spending decision in the presence of a reshuffle therefore takes account of the costs incurred in both periods and balances them against the benefits of spending in the initial period.

Figure 2 illustrates this dynamic with $\omega = 1$ by considering how the minister’s first period spending influences his total payoff (i.e., the sum of his first and second period payoff). The costs (c) and benefits (b) (in the presence and absence of reshuffles) of the minister’s first period spending are separated in the graph so that one can see how each component of the minister’s utility function responds to changes in spending. As the minister spends more he receives greater benefits but he also incurs greater (policy) cost. The minister will, therefore, increase spending as long as marginal benefits exceed marginal costs (i.e., where the slope of the benefit and cost curves are equal). The dashed benefit line indicates the minister’s benefit from spending when reshuffles are prohibited. Under these conditions more spending in the first period allows the minister to benefit from that extra spending in the second period as well as to spend more overall. Spending benefits thus increase steeply when no reshuffles take place, to a point where, in this case, the minister’s optimal choice of first period spending is to spend the maximum possible, i.e., ω .

Under reshuffles, however, the minister’s first period spending does not carry over to the new portfolio, and so spending benefits under reshuffles (the bold line) rise less quickly. This provides one incentive for ministers to limit their spending. The fact that a minister’s first period spending in the portfolio increases the succeeding minister’s ability to spend in that portfolio in the next period provides an additional incentive. If the minister continues to spend as much as possible in the first period of the reshuffle regime, i.e., ω , his successor can spend up to 2ω in the second period, pushing the minister beyond the point at which marginal benefits from spending equals the associated policy costs in both periods, i.e., $b(\omega) - c(\omega) < 0$. The minister avoids this outcome by reining in first-period spending to

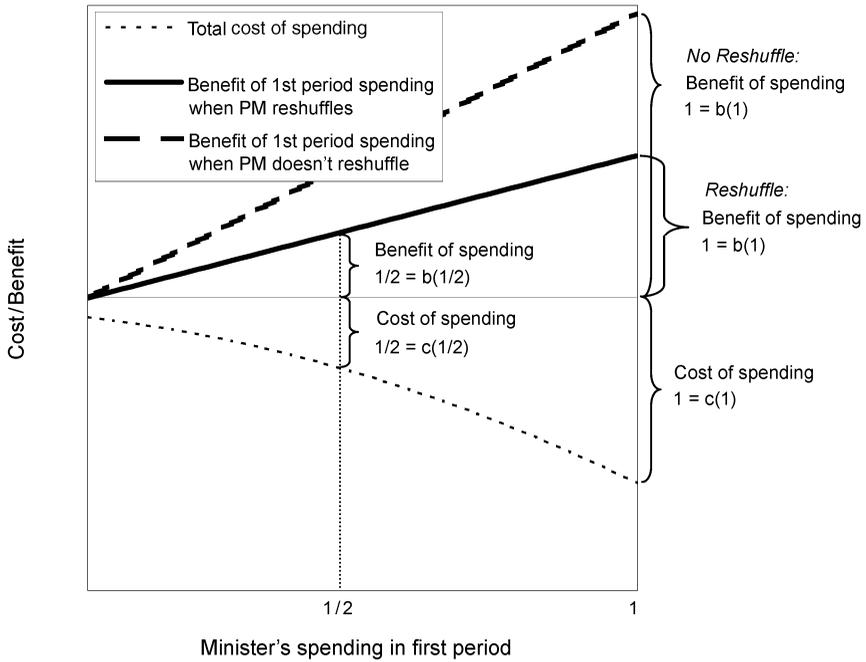


Fig. 2. The incentive to restrict spending under the Cabinet Reshuffle Strategy ($\omega = 1$)

$\omega/2$, the level at which marginal spending benefits exactly offset marginal policy costs, i.e., $b(\omega/2) - c(\omega/2) = 0$.

Importantly, the reduction in spending does not come about simply because the PM’s oversight prevents the ministers from reaching their ideal spending levels in the first period. The example in Figure 2, where the PM’s oversight does not directly constrain the minister, makes this clear. Under the reshuffle regime, the ministers rein in their spending to a level well below the PM’s oversight capability. This occurs, as we explained above, because reshuffles not only prevent the ministers from enjoying the future benefits of their first period spending, but also because reshuffles ensure that the ministers bear the future policy costs of their counterpart’s spending.

How restrictive are the conditions for ministerial restraint equilibria? First, ministerial restraint equilibria are incompatible with overtly ambitious ministers – the ministers will never find it worthwhile to restrain spending if they are very ambitious (i.e., if $\gamma_i > 6\omega$). Similarly, if both ministers have very little ambition, each of them would in principle be willing to restrain their spending – but in this scenario there is no reason for the ministers to worry about excessive spending in the first place.²⁹ Thus, a certain degree of divergence in ambition is required for the existence of a ministerial restraint equilibrium. Figure 3 shows the combinations of ministerial ambitions (γ_1 and γ_2) that produce ministerial

²⁹ Strictly speaking there are two reasons for this result. First, if a minister’s level of ambition is low relative to the PM’s oversight ability, it may not be possible to constrain his spending. Secondly, a low ambition minister (M_1) will only deviate from the PM’s policy by a small amount, which implies that the marginal disutility incurred by M_2 is very low. Thus, it may not be worthwhile for M_2 to try to constrain M_1 ’s spending.

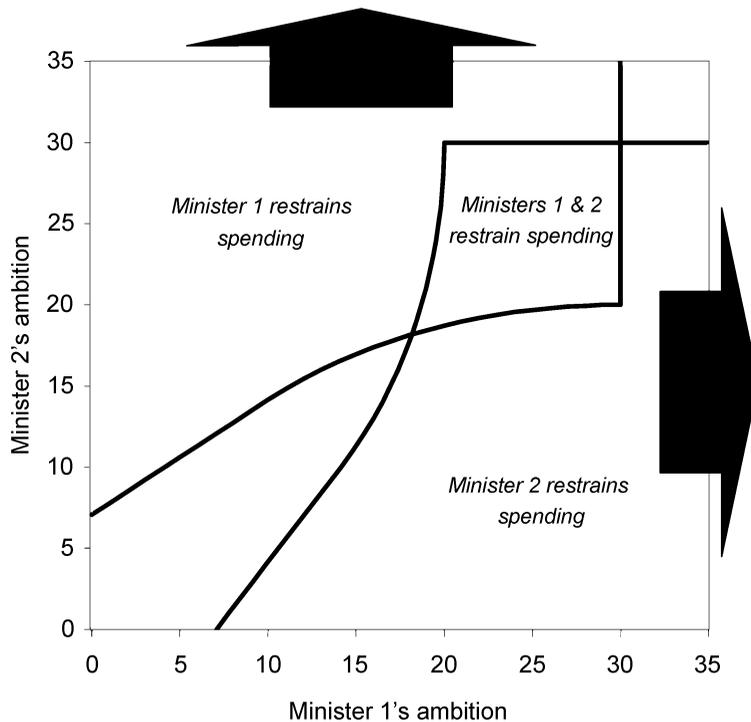


Fig. 3. Ministerial restraint equilibria ($\omega = 5$)

restraint equilibria when the PM's oversight equals five ($\omega = 5$). The figure suggests that the conditions are fairly permissive and one minister will generally have an incentive to curb his spending. The lines show the combinations of the ambition parameters for which the ministers are indifferent between restraining their spending and trying to reach their ideal spending levels in their portfolios. In the area above the line intersecting the y-axis, M_1 strictly prefers constraining spending, whereas in the area below the line intersecting the x-axis, M_2 strictly prefers constraining spending. The upwards slope of the lines indicates that the ministers become less willing to limit spending as their ambition increases. Indeed, the gains from constrained spending must increase if it is to remain an optimal strategy for the minister – and this will only be the case if the opposing minister is sufficiently ambitious. Once a ministers' level of ambition reaches 6ω (30 in the figure), however, he no longer constrains his spending regardless of his colleague's level of ambition.

We should like to point out that these results come about without the PM being able to sack – or even threatening to sack – ministers. This is noteworthy for two reasons. First, it shows that the beneficial effects of reshuffles do not flow in a trivial fashion from the PM putting pressure on ministers to do their jobs. Secondly, it makes our model more realistic. In many cabinets, political circumstances, party rules or coalition agreements prevent PMs from hiring or firing some or all of their ministers unilaterally. The model that we have presented above, which relies only on the reassignment of portfolios among sitting ministers, shows how PMs can use reshuffles to limit agency loss even under these restrictive conditions.

Ministerial Drift and Costly Reshuffles

The above result demonstrates that reshuffles lead to welfare improvements from the PM’s vantage point. We have not, however, addressed whether the PM can credibly commit to reshuffling the cabinet, i.e., whether the PM will find it rational to reshuffle when she faces that decision. The logic of the ministerial restraint equilibrium would lead one to expect a credible commitment to be difficult because the positive effects on the ministers’ spending appear in the first period of the game; in the second period the ministers go all out. Thus, if cabinet reshuffles are costly (because the PM uses up her political capital, the public interprets reshuffles as a signal of a policy failure, departmental efficiency declines, etc.), the PM is better off not reshuffling. If the ministers have already held back their spending, the PM has no incentive to execute a costly reshuffle because the benefits have already been realized. If, however, the ministers have not constrained their first period spending, there is nothing that the PM can do to alter that fact. Again, a reshuffle is redundant.³⁰ This, of course, implies that the ministerial restraint equilibrium unravels because the ministers, realizing that the PM has no incentive to reshuffle them, have no incentive to curb their spending.

Modelling costly reshuffles involves three modifications from the previous section. First, the sequence of play is now such that following the ministers’ first period spending decision the PM decides whether or not to reshuffle the cabinet, i.e. the PM sets $r = 0$ or $r = 1$. Following the PM’s action, the ministers decide on their second period spending. Secondly, the PM is assumed to incur a cost, $c \in \mathbb{R}^+$, if she reshuffles the cabinet, i.e.:

$$u_{PM}(x^1, x^2) = -\|x^1\|^2 - \|x^2\|^2 - c. \tag{3}$$

Finally, without loss of generality, we also assume that $\gamma_2 > \gamma_1$, that is, that Minister 2 is more ambitious than Minister 1.

We begin by deriving the conditions under which it is rational for the PM to reshuffle the cabinet. Subsequently, we derive the conditions for the existence of a ministerial restraint equilibrium. Recall, ministerial restraint equilibria are defined as equilibria in which at least one of the ministers opts to spend less than he would if a reshuffle did not occur. Thus, we are concerned with establishing that ministerial restraint equilibria exist even when cabinet reshuffles are costly.³¹

We proceed via backwards induction, beginning with the last stage of the game. We have shown (Lemmas 1 and 2 in Appendix A) that in the second period the ministers will spend

$$z_i^* = \min \left\{ \omega, (1 - r) \left(\frac{\gamma_i}{2} - s_i \right) + r \left(\frac{\gamma_i}{2} - s_{-i} \right) \right\}.$$

³⁰ This is partly a function of employing a two-period model, and one can get around the credible commitment problem by infinitely repeating the game. Infinite repetition would allow reshuffles to affect the future behaviour of the ministers and give the PM an incentive to build a reputation for reshuffling. Indeed, this sort of set-up would be similar to the familiar Prisoners’ Dilemma in so far as the actors’ preferences have a common element but individually prefer spending more to less (or, in the PM’s case, avoiding the cost of a reshuffle). Standard results on the repeated Prisoners’ Dilemma (see Drew Fudenberg and Eric Maskin, ‘The Folk Theorem in Repeated Games with Discounting or with Incomplete Information’, *Econometrica*, 3 (1986), 533–54) could then be harnessed to show that co-operation emerges, i.e., that the ministers limit their spending. An example of a ministerial restraint equilibrium under repeated interactions is available from the authors upon request. However, while repetition might support a costly reshuffle equilibrium, it unnecessarily introduces additional complexity and rests, ultimately, on the ‘black box’ of the folk theorems.

³¹ Cabinet reshuffles may also occur along the path of play in other (non-ministerial restraint) equilibria of the game as suggested by Lemma 3 below.

That is to say, after taking account of the current level of spending on the portfolio, each minister brings spending to his optimal level ($\gamma_i/2$) or as close to that level as the PM's oversight ability allows. Moving up the game tree, the PM decides whether or not to reshuffle.

Intuitively, cabinet reshuffles benefit the PM whenever the less ambitious minister can reach his ideal level of spending after the reshuffle whereas the more ambitious minister cannot. Costly reshuffles are therefore made feasible by differences in the ministers' levels of ambition, i.e., the fact that $\gamma_1 \neq \gamma_2$.³² The logic is as follows. Suppose the ministers have spent s_1 and s_2 in the first period with $s_2 > s_1$. Suppose further that the less ambitious minister, M_1 , will reach his optimal level of spending in the second period regardless of which portfolio he finds himself in, but that the more ambitious minister, M_2 , will only be able to do so if he remains in his current portfolio. Without a reshuffle the policy outcome will equal $(\gamma_1/2, \gamma_2/2)$ whereas if the PM reshuffles the cabinet the outcome will equal $(s_1 + \omega, \gamma_1/2)$. As long as the cost of reshuffling is not too high, the PM prefers to reshuffle the cabinet because less spending takes place (i.e., $s_1 + \omega < \gamma_2/2$). Formally, this means that following inequalities must be satisfied (see Lemma 3 in Appendix B):³³

$$s_2 + \omega > \frac{\gamma_1}{2}. \quad (4)$$

$$s_1 + \omega < \frac{\gamma_2}{2}. \quad (5)$$

The existence of a ministerial restraint equilibrium is contingent on whether the ministers' first period spending satisfies these conditions, i.e., these spending conditions lead to a subgame in which the PM prefers to reshuffle the cabinet. Reaching this subgame is not a foregone conclusion, however. While Proposition 1 still provides the ministers' equilibrium strategies conditional on the presence and absence of reshuffles, the ministers now have the additional option of altering their first period spending to induce the PM to refrain (or not) from reshuffling the cabinet. Thus, if a reshuffle promises to reduce a minister's utility, he may be able to sacrifice enough first period spending to prevent the reshuffle and receive a higher second period payoff. Showing the existence of a ministerial restraint equilibrium requires checking that the ministers do not find it beneficial to induce the PM not to reshuffle. Propositions 2 and 3 show that sufficiently different levels of ambition between the ministers undermines this pre-emptive strategy and allows the PM to effect a ministerial restraint equilibrium.

PROPOSITION 2. *A ministerial restraint equilibrium exists for some $c \in \mathbb{R}^+$ if $\gamma_1 < 2\omega$ and $\gamma_2 > (\gamma_1 + 2\omega)/\sqrt{2}$. The path of play is $s_1^* = (\gamma_1 - 2\omega)/4$, $s_2^* = \omega$, $r^* = 1$, $z_1^* = \gamma_1/2 - \omega$, and $z_2^* = \omega$.*

³² The PM also has the incentive to engage in costly reshuffles if the portfolios differ in importance, i.e., drift in one portfolio is more costly to the PM than in the other. (We thank an anonymous referee for suggesting this possibility to us.) A similar dynamic emerges from the concavity of the PM's utility function in that policy drift concentrated in any one portfolio is more costly than if it were spread across both portfolios. The real-world intuition here is that the PM prefers small policy deviations in many portfolios to a gross policy failure in a single portfolio.

³³ To see why these conditions are necessary consider first the case where the ministers' ambitions are high enough relative to the oversight parameter that neither can reach their desired level of spending in the second period. In this case both ministers will choose to increase their spending by ω in the final period regardless of whether or not a reshuffle occurs. However, if the ministers are relatively unambitious both will reach their desired level of spending in the second period, again, regardless of whether a reshuffle occurs or not.

PROPOSITION 3. A ministerial restraint equilibrium exists for some $c \in \mathbb{R}^+$ if:

(i) $2\omega < \gamma_1 < \frac{10}{3}\omega,$

(ii) $\gamma_2 > \max \left\{ \frac{\sqrt{-2\gamma_1^2 + 24\gamma_1\omega - 8\omega^2}}{2}, \frac{4\omega\gamma_1 - \gamma_1^2}{10\omega - 3\gamma_1} \right\}.$

The path of play is

$$s_1^* = \frac{\gamma_1 - 2\omega}{4}, \quad s_2^* = \omega, \quad r^* = 1, \quad z_1^* = \frac{\gamma_1}{2} - \omega, \quad \text{and} \quad z_2^* = \omega.$$

Propositions 2 and 3 deserve a couple of comments. Clearly, the conditions on the ministers' ambition levels and the PM's oversight ability (γ_1, γ_2 and ω) are not sufficient to produce a ministerial restraint equilibrium; very high costs will always prevent the PM from reshuffling. The propositions show the boundary conditions for a ministerial restraint equilibrium as the costs tend to zero – as the costs increase these conditions become more restricted. However, the propositions do show that ministerial restraint equilibria exist even in the face of costly reshuffles. We do not provide a formal analysis of how the cost of reshuffling influences the existence of a ministerial restraint equilibrium, but the effects of increasing costs are straightforward: as the costs of reshuffling increase, smaller first period spending deviations are required to induce the PM not to reshuffle. Thus, the ministers need to sacrifice less (in the first period) to prevent reshuffles. It follows that ministerial restraint equilibria can only be sustained at higher costs if there is sufficient

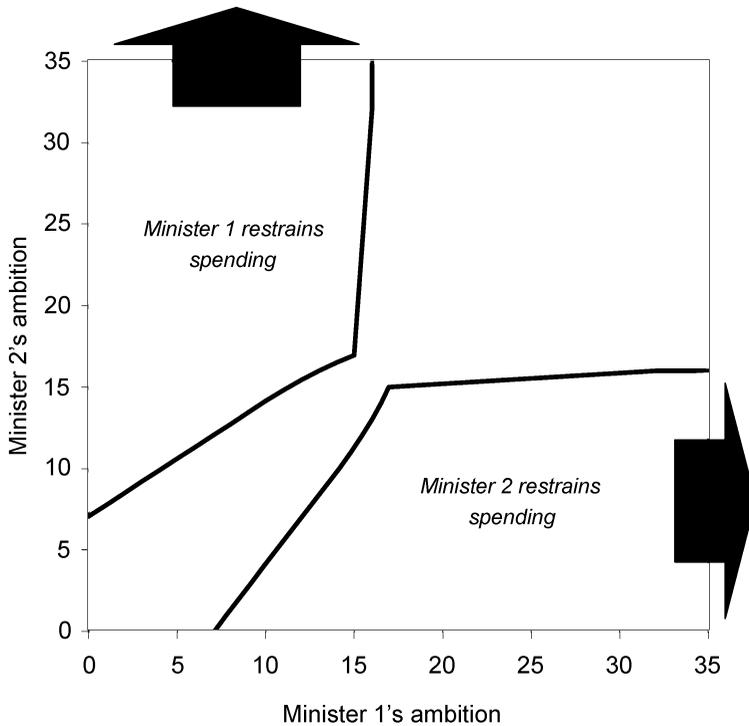


Fig. 4. Ministerial restraint equilibria when reshuffles are costly ($\omega = 5$)

divergence in the ministers' levels of ambition.³⁴ The propositions also carry an interesting and non-intuitive implication. The ministerial restraint equilibrium, and cabinet reshuffles more generally, can only occur on the equilibrium path of play if the ministers differ in their level of ambition. This is rather interesting because it suggests, contrary to implications of the adverse selection approach, that it is not only the 'bad', or high ambition, ministers who are the targets of reshuffles, but that reshuffles will target both 'good' and 'bad' ministers.

Figure 4 graphs the conditions for ministerial restraint equilibria when the PM's oversight ability equals five ($\omega = 5$).³⁵ It is instructive to compare Figure 4 with Figure 3. The set of ministerial restraint equilibria shrinks somewhat when the PM is not assumed to be able to commit credibly to reshuffling the cabinet. This occurs because the PM's incentives derive, to a greater extent than before, from the asymmetry in the ministers' ambition, as Lemma 3 indicates.

Discussion

Proposition 1 establishes that cabinet reshuffles, the simple act of moving ministers between portfolios, can limit the moral hazard that cabinet ministers face. The proposition provides an answer to the question why a PM might want to reshuffle his cabinet. The result is useful for at least two reasons. First, it counters the common notion that cabinet reshuffles – because they prevent the accumulation of ministerial experience – are antithetical to good governance. Reshuffles may still undermine ministerial experience, of course, but we have demonstrated that the PM and the governing coalition as a whole reap countervailing benefits in the form of policy outcomes that more closely conform to their preferences. Secondly, the result explains why reshuffles often include the lateral movement of ministers, even those who might be considered (from the PM's perspective) 'good' ministers. Promotions and demotions fit quite easily into a scandal-driven or adverse-selection model of reshuffling; lateral movements fit these models far less easily.

The second set of results deals with the issue of whether the PM can, in fact, credibly commit to reshuffling the cabinet. This is clearly an important question to answer, especially if reshuffles are politically costly to the PM. If it were the case that PMs never find it in their interest to reshuffle, then the importance of Proposition 1 would be limited. The results just presented above deal with this issue, and show that the PM may still find it rational to reshuffle the cabinet even if it is costly to do so. The conditions for ministerial restraint equilibria are somewhat more restrictive than when the reshuffle regime is exogenously determined, but not overly so. Of particular interest is that ministerial restraint equilibria generally require a certain degree of difference in the ministers' levels of ambition. This seems a moderate restriction as it is generally acknowledged that Cabinet ministers do vary in their ambitions, some being merely prime ministerial standard bearers, and a few others being 'big beasts of the jungle',³⁶ who are major political figures in their

³⁴ If the ministers are both very ambitious, nothing (including reshuffles) deters them from spending as much as possible. In contrast, if the ministers both lack ambition, they have no incentive to overspend, and reshuffles are obsolete, a cost without a benefit.

³⁵ Following the statement of the Propositions 2 and 3, the graph represents the conditions as costs tend to 0. The areas representing ministerial restraints contract as costs rise.

³⁶ Anthony King, 'Ministerial Autonomy in Britain', in Laver and Shepsle, eds, *Cabinet Ministers and Parliamentary Government*, pp. 203–25.

own right and very clearly rivals to the PM in political influence and appeal if not in formal status.

EMPIRICS: ADVERSE SELECTION OR MORAL HAZARD?

We have demonstrated that cabinet reshuffles can be employed by PMs to reduce the moral hazard facing their cabinet ministers. Whether PMs actually use reshuffles in this fashion, or whether other models provide better explanations of reshuffles remain open questions. It may well be that reshuffles are simply responses to scandals or are better viewed as solutions to an adverse-selection problem, to wit, the recruitment to cabinet of ‘good’ ministers and the exclusion of ‘bad’ ministers. The evidence that we present here, however, suggests that there are significant elements of reshuffles that these alternative models cannot explain, and which comport better with a moral hazard view of reshuffles. We wish to stress, however, that our claim is neither that cabinet reshuffles are solely about limiting moral hazard nor that scandal or adverse selection are irrelevant to reshuffles. It is the more limited claim that (a) there are elements of reshuffles that cannot be explained by these alternative models, and (b) that some broad outlines of reshuffles tend, in fact, to comport with our moral hazard model. It follows that we do not take the evidence that we present here to be conclusive; it is an initial empirical comment rather than the final word on Cabinet reshuffles.

The Adverse-Selection Model of Cabinet Reshuffles

The adverse-selection problem arises at the cabinet-building stage. The PM confronts the challenge of selecting cabinet members who are competent (technically and politically), dependable and loyal, who, once placed in charge of a portfolio, will run it effectively and in a manner that accords with the wishes of the PM and the governing coalition. The attendant difficulty is that the PM must make these selections without full information, the minister’s loyalty, competence and ambition (i.e., the minister’s type) being only imperfectly observed by the PM. Over time, of course, the PM gains information about her ministers, and cabinet reshuffles are the mechanism by which the PM translates this accumulated knowledge into personnel decisions. Huber and Martinez-Gallardo label this the ‘talent allocation model’, and describe its operation as follows:

Since party leaders will often be uncertain about which individuals have (or can easily gain) the technical expertise and political skills necessary to do their jobs well, *a process of trial and error occurs* to discover the best talent. This can only occur by getting rid of some ministers, bringing in new faces, and reshuffling individuals from one post to another. One task of party leaders, then, is to identify which individuals excel at which tasks, and *to deploy these individuals to the posts where they are most needed*. The political context should influence the way in which talent is discovered and deployed, and thus turnover patterns within and across countries.³⁷

There are two elements to the talent allocation model. First, there is a process of trial and error: a minister is placed in a portfolio, observed by the PM for some time, and if the minister performs well (i.e., in accord with the PM’s preferences), the minister remains in the portfolio, if not, he is removed from the post and perhaps from the cabinet altogether.

³⁷ Huber and Martinez-Gallardo, ‘Cabinet Turnover in Parliamentary Democracies’, p. 5 (emphasis added).

Secondly, there is a process of trying to match individuals to portfolios in which they are likely to excel. The trial and error search procedure strikes us as explaining the vertical movement of ministers, i.e., the demotion of an incompetent minister from cabinet and the promotion to cabinet of a member who the PM believes might be an improvement. Certainly, this is how Dewan and Dowding's model of ministerial scandals and resignations operates.³⁸ A scandal provides the PM with information about the minister's capacity, and given that information, the PM decides to sack the minister or keep him on. By comparison, the talent-to-portfolio matching process would appear to explain the horizontal movement of ministers. Thus the PM moves a minister into a portfolio, observes the fit between the minister's talents and the portfolio's demands, and if the fit is good, leaves the minister in place. If, however, the fit is bad, the minister is moved laterally to another portfolio where the PM hopes the fit is better.

It is often difficult to distinguish empirically between adverse selection and moral hazard. That is certainly the case here where key variables in the two models, the minister's talent and his ambition are unobserved. The talent-to-portfolio matching argument, for example, predicts the lateral movement of ministers that is also a feature of our moral hazard model of reshuffles. Nevertheless, there are differences between the adverse selection model and our moral hazard explanation. For example, the trial and error dimension of the adverse-selection approach would lead one to expect cabinet changes to be dominated by movements of ministers or ministerial candidates in and out of the cabinet; the lateral movements of ministers that we focus on are obsolete on this model, serving neither to weed out bad ministers or to bring in new (and potentially better) ministers. Similarly, the talent-to-portfolio dimension of the adverse-selection model predicts reshuffles to focus on moving 'bad' ministers (high ambition and/or low capability). Our model, in contrast, explains why cabinet reshuffles frequently consist of horizontal movements of ministers and also why they involve the movement of 'good' and 'bad' ministers (although the latter tend to receive a disproportionate share of the publicity). We can, then, get some leverage on these sorts of differences by breaking apart the trial and error and talent-matching dimensions of the adverse-selection model and testing each separately. This leverage is magnified by some of the institutional differences that we find between parties examined in our previous work.³⁹

Trial and Error Adverse-Selection and Australian Cabinet Reshuffles

Comparing the patterns of cabinet reshuffles in Australia under Australian Labour Party (ALP) and Liberal–National (Coalition) governments is one way to disentangle the trial and error version of the adverse-selection model from the moral hazard explanation. The ALP and Coalition employ quite different cabinet rules. Liberal PMs dominate their parties. They have authority to hire and fire ministers unilaterally and to allocate and re-allocate portfolios as they wish.⁴⁰ Their longstanding coalition with the National party imposes some constraints; the National leader is always the Deputy PM, and the Nationals always have some cabinet representation. However, lacking outside options, the National

³⁸ Torun Dewan and Keith M. Dowding, 'The Corrective Effect of Ministerial Resignations', *American Journal of Political Science*, 49 (2005), 46–56.

³⁹ Kam and Indridason, 'The Timing of Cabinet Reshuffles in Five Westminster Parliamentary Systems'.

⁴⁰ Dean Jaensch, *The Politics of Australia*, 2nd edn (Melbourne: Macmillan, 1997), pp. 270–1.

party does not have much leverage over a Liberal PM.⁴¹ The ALP operates on the far different premise that the leadership and cabinet are delegates of the party. To ensure caucus control of the leadership and cabinet, ministers are elected by the parliamentary party rather than selected by the PM. An ALP PM has only the unilateral authority to allocate portfolios among the elected ministers. Demotions from and promotions to cabinet require the PM, deputy PM, and the ALP Senate leader and deputy leader to reach a three-fourths majority.⁴²

These party rules have a bearing on the dynamics of reshuffles in both parties. The ALP's rules on the selection and management of the cabinet mean that an ALP PM has a limited capacity to employ reshuffles to deal with the adverse-selection problem, at least the trial and error version of the problem. This stands in contrast to a Liberal PM, who can use reshuffles to demote 'bad' ministers and promote more promising members to cabinet. This contrast suggests the following empirical hypotheses about the trial and error adverse-selection model:

HYPOTHESIS 1: If reshuffles are primarily trial and error search processes in which the PM sacks 'bad' ministers and promotes 'good' (or potentially 'good') members, ALP PMs should not have much occasion to use their unilateral power to re-allocate portfolios, that is, to move ministers laterally.

HYPOTHESIS 2: If reshuffles are primarily trial and error search processes in which the PM sacks 'bad' ministers and promotes 'good' (or potentially 'good') members, reshuffles of Australian Coalition cabinets should be dominated by the vertical movement, i.e., the promotion and demotion of ministers.

Data and methods. We test these hypotheses by comparing the movements of cabinet ministers under the Fraser (Liberal–National) and Hawke (ALP) administrations.⁴³ These cases obviously do not exhaust the universe of Australian governments, but they still offer a useful comparison. The Fraser administration lasted eighty-nine months from November 1975 to March 1983, the Hawke administration, ninety-eight months, from March 1983 to December 1991.⁴⁴ Thus, both administrations, roughly equal in duration and temporally adjacent to one another, represent extended periods of dominance for the respective parties. To help structure the comparison we define four types of personnel actions that a PM can take:

1. Demotion: The minister is demoted from cabinet (including cases in which the minister retains portfolio *x*, but the portfolio itself is dropped from cabinet);
2. Promotion: The minister enters the cabinet from a non-cabinet position;⁴⁵
3. Transfer: The minister is moved laterally from portfolio *x* to portfolio *y*;

⁴¹ Jaensch, *The Politics of Australia*, p. 306.

⁴² Jaensch, *The Politics of Australia*, p. 241. There is, of course, no reason to expect the preferences of these deputy leaders to coincide with the PM's.

⁴³ We follow Dowding and Kang in identifying an administration as the continuous period of a given PM's leadership of the government, irrespective of intervening elections (see Keith Dowding and Won-Taek Kang, 'Ministerial Resignations 1945–97', *Public Administration*, 76 (1998), 411–29, p. 427).

⁴⁴ We include in the analysis Fraser's caretaker government of 11 November–22 December 1975.

⁴⁵ Tracking demotions and promotions separately does not necessarily involve doublecounting because the PM could expand or contract the size of the cabinet, promoting ministers without demoting anybody, for example.

4. Redefinition (of duties): Another form of lateral movement, in which the minister, holding portfolios x and y has (a) y altered to y' , (b) y removed, so that he holds only x , and/or (c) z added, so that he holds, x , y and z .⁴⁶

Results. Figures 5 and 6 show the frequency and type of ministerial movements in the Fraser and Hawke administrations, respectively. Reshuffles of Fraser's Coalition Cabinet were characterized by twenty-two vertical moves (twelve demotions and ten promotions) and thirty-three lateral moves (thirteen transfers and twenty redefinitions). Thus, Fraser actually exhibited a greater reliance on the lateral movement of ministers, seeming especially to prefer redefining ministers' duties. The Hawke Cabinet was actually less stable, experiencing fifteen demotions, nineteen promotions, eighteen transfers and twenty-two redefinitions, for an overall total of seventy-four personnel moves. Of course, given the ALP's rules on cabinet management, we know that Hawke was solely responsible only for the forty lateral moves – but this figure is still comparable to the total number of Fraser's personnel moves, and a fair distance from little or no personnel movement predicted by the trial and error search model. In fact, there is no statistical difference in the pattern of reshuffles (i.e., the balance between promotions, demotions, transfers and altered duties) between the Fraser and Hawke administrations.⁴⁷ With reference to Hypotheses 1 and 2, the data indicate, then, that Coalition PMs tend not to rely on vertical personnel moves, and that ALP PMs do, in fact, frequently reshuffle their cabinets in a fashion that the trial and error search model takes as obsolete. This suggests that reshuffles are not solely – or even mostly – about a trial and error search for good ministers. Of course, Fraser and Hawke's greater reliance on the lateral movement of ministers is equally

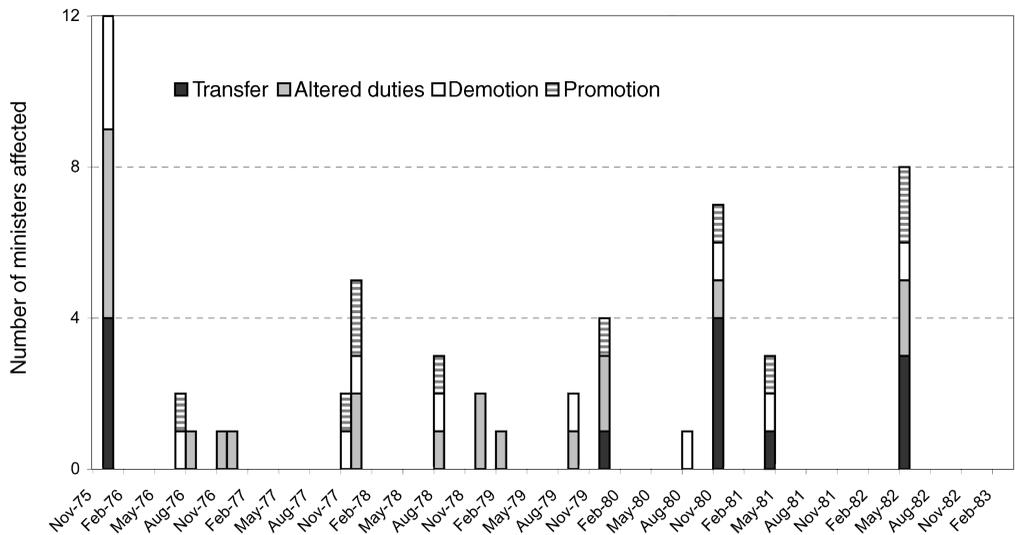


Fig. 5. Cabinet reshuffles in the Fraser Government, 1975–83

⁴⁶ Some examples would be: (a) the Minister of Trade and Industry having Industry reclassified as Primary Industry; (b) the Minister of Trade and Industry retaining Industry while the Trade portfolio is transferred to Foreign Affairs; and (c) the Minister of Trade and Industry having Science and Technology added to the portfolio.

⁴⁷ This claim is made on the basis of a χ^2 -test, taking the pattern of ALP reshuffles as the observed data and the pattern of Coalition reshuffles as the expected data ($\chi^2 = 3.28$, $df = 3$, $p = 0.35$).

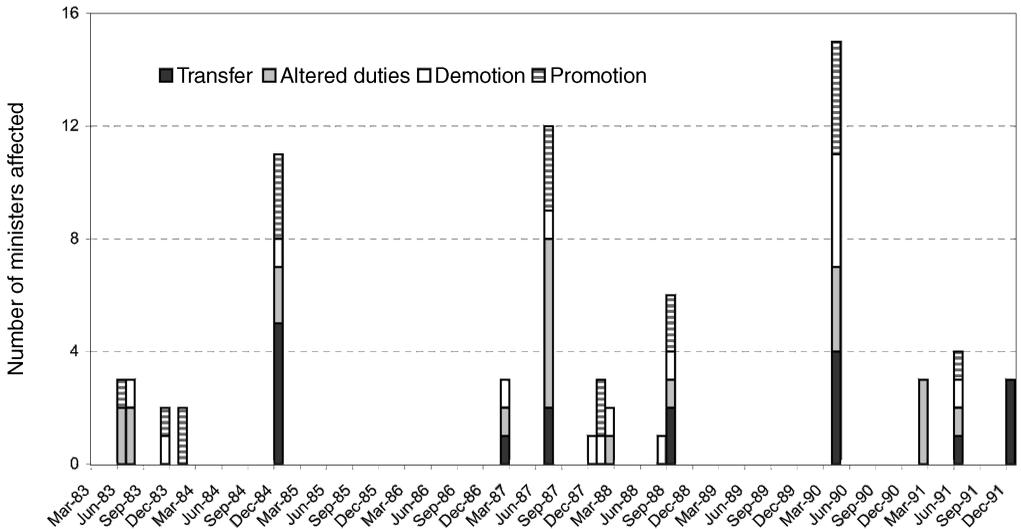


Fig. 6. Cabinet reshuffles in the Hawke Government, 1983–91

consistent with our moral hazard argument and an adverse selection model in which the PM attempts to match ministers’ capabilities to portfolios.

Matching Ministerial Talent to Portfolios: The Timing and Extent of Cabinet Reshuffles

To disentangle these possibilities we examine the relationship between the timing (properly speaking, the order) and the extent of cabinet reshuffles. Our argument is as follows. If the PM’s task is to match ministers’ talents to the right portfolio (or tailor portfolios to match ministers’ capabilities), then the PM should be able to get more and more matches right with every additional reshuffle. The PM selects a cabinet and observes it for a while, moves the ‘ill-fitting’ ministers to another portfolio, observes how they do in their new jobs, and subsequently moves only the subset of ministers that perform poorly in their second assignment. The number of ministers in this subset should decline (weakly) over time. The only significant obstacles to this winnowing process are elections, which are harbingers of the retirement or defeat of experienced ministers and which may bring into the party an influx of better quality politicians (whom the PM would want to bring into cabinet). The contrast between this empirical implication of the talent-to-portfolio model and our moral hazard model is sharp. Moral hazard of ministers is, on our account, a structural (i.e., constant) feature of parliamentary government. Our model, then, predicts no correlation between the timing or order of the reshuffle and its extent (i.e., how many ministers are affected).

HYPOTHESIS 3: If reshuffles are primarily means to match talent to portfolios, then over time (i.e., over a sequence of reshuffles), the number of ministers affected (i.e., demoted, promoted, transferred, or redefinition) by the reshuffle should decline.

HYPOTHESIS 4: If, however, reshuffles are primarily means of limiting moral hazard on the ministers' side, the the number of ministers affected by the reshuffle should be uncorrelated to the timing or ordering of the reshuffle.

Data and methods. Our data come primarily from Britain, but to show that our results are not country-specific, and to drive home the point that even nuanced versions of the adverse-selection model have limited leverage, we also include the Australian data employed above. Our empirical test involves regressing the number of cabinet ministers affected by each reshuffle on the ordering of the reshuffles (i.e., first, second, third, etc.). Dummy variables control for post-election reshuffles and allow for separate intercepts across administrations. The talent-matching hypothesis (Hypothesis 3) predicts a negative relationship between the number of ministers reshuffled and the order of the reshuffle; our moral hazard hypothesis (Hypothesis 4) suggests that there should be no relationship whatsoever.

Following our earlier work, we define a cabinet reshuffle as the movement (i.e., the promotion, demotion, transfer or redefinition) of at least two senior ministers in at least two portfolios all within thirty days.⁴⁸ The effect of this classification is to focus attention on broad re-organizations of the cabinet rather than isolated personnel changes that occur in just a single portfolio (as might happen if a minister suddenly dies or falls ill, for example, and the PM takes control of the post for a week before a permanent replacement is named). In counting the extent of the reshuffle, that is, the number of ministers affected, we count the demotion of a minister and the promotion of his replacement from outside the cabinet as affecting just one minister. This counting method avoids inflating the extent of later reshuffles in a manner that would bias our test against the talent-to-portfolio matching model.⁴⁹ The British data extend from 1955 to 1997, encompassing the administrations of Macmillan, Wilson, Heath, Wilson-Callaghan, Thatcher and Major.⁵⁰ The median number of reshuffles across the six administrations was five, with Thatcher, the longest serving, engaging in sixteen.

Results. Our results are shown in Table 1, and are unambiguous: there is simply no relationship between the ordering of the reshuffle and the number of cabinet ministers affected. In neither country can the coefficient on the reshuffle number variable be distinguished from 0, implying that PMs are as likely as not to completely overhaul their cabinets as time goes by as to tinker with them marginally over time. There is, in short, no evidence of a winnowing process, hence little evidence of a talent-matching process. The Australian data are worth an extra remark in this respect. On the adverse selection argument, the only motivation for Hawke, the ALP PM, to reshuffle is to improve the match between his ministers' talents and their portfolios. Yet, the interaction between ALP

⁴⁸ In Britain, there are two grades of senior ministers, full cabinet ministers and ministers of state. As in Indridason and Kam, we take account of the movement of both types of ministers in determining whether a reshuffle has occurred. In practice, there is very little ambiguity, as there are very few isolated ministerial personnel moves in Britain. Our data on cabinet reshuffles were collected from Butler and Butler, supplemented by appendices in Thatcher and Major; see Kam and Indridason, 'The Timing of Cabinet Reshuffles in Five Westminster Parliamentary Systems'; David Butler and Gareth Butler, *British Political Facts, 1900–2000*, 8th edn (New York: St Martin's Press, 2000); Margaret Thatcher, *The Downing Street Years* (HarperCollins, 1993); Major, *John Major*.

⁴⁹ There is also a definitional rationale: strictly speaking, until one is promoted to cabinet, one is not a cabinet minister and cannot therefore have been a cabinet minister affected by the reshuffle.

⁵⁰ We count the March 1974–1979 period as a single Wilson–Callaghan administration.

TABLE 1 *The Size of Reshuffles*

	Britain		Australia	
Reshuffle No.	0.14 (0.149)	- 0.08 (0.14)	- 0.05 (0.21)	
Election	5.59*** (1.51)	6.01*** (1.19)	6.07*** (1.26)	
Macmillan	5.49*** (1.35)			
Wilson	3.67*** (1.30)			
Heath	3.14** (1.60)			
Wilson–Callaghan	6.05*** (1.82)			
Thatcher	3.59** (1.52)			
Major	7.46*** (1.50)			
Hawke		3.09*** (1.19)	3.28** (1.50)	
Fraser		2.51** (1.164)	2.29 (1.57)	
Hawke × Reshuffle No.			- 0.06 (0.29)	
Observations	44	24	24	
R ² adjusted	0.80	0.76	0.75	
F statistic	22.65	20.42	15.56	

Notes: The table shows ordinary least squares regression coefficients. Standard errors in parentheses.

Levels of significance: ***99%, **95%, *90%.

dummy and reshuffle number indicates that there is no evidence that the extent of reshuffles of Hawke's cabinet declined with additional reshuffles.⁵¹ These null results do, however, comport with our moral hazard argument.

The Pattern of British Cabinet Reshuffles

We now turn to a more detailed examination of the British reshuffle data. Our intent here is to show that our moral hazard model can explain facets of the same data that – as we have just demonstrated – cannot be explained by the adverse-selection model. The central result of our model is that PMs can use cabinet reshuffles to limit the agency loss generated

⁵¹ We test the interaction as in Robert J. Friedrich, 'In Defense of Multiplicative Terms in Multiple Regression Equations', *American Political Science Review*, 26 (1982), 797–833.

by the moral hazard on the ministers' side.⁵² Reshuffling is thus a partial substitute for direct monitoring by the PM of the ministers' activities. If directly monitoring ministers is a costly activity (and, at the very least it has an opportunity cost), then it is reasonable to expect that PMs will substitute away from direct monitoring in those portfolios where monitoring costs and the potential for agency losses are high. Our logic is as follows. We have assumed in our model that the amount of agency loss that a cabinet minister can generate is independent of the portfolio they occupy.⁵³ This need not be the case in the real political world. Ministers (and civil servants) heading up departments with very large budgets (for example, Health) or influence over the broad scope of government (such as the Treasury) can generate far more agency loss than can the ministers who head up small departments (such as, Agriculture). Given a large budget, ministers and civil servants can erect many programmes and cater to (or build) a broad political constituency. In politically influential departments even small deviations from the PM's ideal point can blow the whole government off course. (Think of a foreign minister committing the government to a trade or environmental pact, for example.)

For some of these portfolios, direct monitoring by the PM can effectively limit ministerial drift. Direct monitoring of portfolios with complicated organizational structures or highly technical policy areas is unlikely to be effective or efficient, however. A proliferation of executive agencies and statutory bodies makes it impractical to go over every policy proposal or sub-departmental budget line in detail, whilst technical issues amplify the informational advantages of a department's bureaucrats. Organizational and policy complexity should, therefore, push PMs to switch away from direct monitoring, and to rely instead on reshuffling to limit ministerial drift in the portfolio. Of course, constantly reshuffling experienced ministers out of politically important or complex portfolios may result in inefficiency or some loss of political control – as seen in the traditional critique of reshuffles. We do not wish to deny the validity of this concern, but we have shown formally that PMs may still be willing to engage in reshuffles despite the costs involved. However, without direct measures of these 'expertise' costs, we admit that we proceed on the assumption that these costs are constant across portfolios. Granting this *ceteris paribus* assumption, we state the following hypothesis:

HYPOTHESIS 5: If PMs use reshuffles to manage ministerial drift, portfolios in which policy deviations can have large political impacts or which are resistant to direct monitoring because of their complexity should be reshuffled more frequently than portfolios in which policy deviations are less politically significant or which are easily monitored.

⁵² We reiterate that the agency loss is not limited to running up the budget, and is not necessarily due to the fact that ministers are spendthrifts. Ministers might equally be incompetents, civil service stooges, and/or Machiavellian rivals for power – and for any of these reasons fail to run their departments as the PM wishes. Similarly, our assumption that ministerial drift takes the form of spending can easily be rephrased in terms of policy. It is only for reasons of convenience (though an accurate convenience, we think) that we focus on the ministers' spending decisions. The only real limitation we place on the nature of the agency is that it stems from moral hazard on the ministers' side – as opposed to adverse selection on the PM's side.

⁵³ Note, however, that the comparative statics on γ give a good indication of how the incentive to reshuffle varies with the potential of policy loss. The greater the potential for agency loss, the more likely or frequent reshuffles should become.

Data and Methods

We test the hypothesis on British cabinet reshuffles between 1955 and 1997. We define a cabinet reshuffle as we did above, the movement (i.e., the promotion, demotion, transfer or redefinition) of at least two senior ministers in at least two portfolios all within thirty days. We record for the sixteen most prominent portfolios, two statistics that serve as our dependent variables: (1) the total number of cabinet ministers who have occupied the portfolio, and (2) the total number of times that reshuffles (fifty-six in total) affected a given portfolio.⁵⁴ Our key independent variables are: (1) the number of agencies operating under the portfolio's bailiwick,⁵⁵ and (2) expert assessments of each portfolio's policy influence.⁵⁶ The number of agencies serves as our measure of the portfolios' complexity, and should therefore be positively related to the number of cabinet ministers and number of times that the portfolio is affected by reshuffles. We recode the Laver–Hunt portfolio influence measure to range from 0 (not influential) to 10 (very influential), so that it too should be positively related to our dependent variables.⁵⁷ It would have been preferable to have these variables measured annually or on a government-by-government basis, but the data (especially Laver and Hunt scores) are simply not available on such a basis. This cuts into our degrees and freedom, and it implies that our data are limited to informing us how often the Secretary of State for Defence and the Welsh Secretary, for example, have been replaced given that the former heads up a department that has, on average, been large, organizationally complicated and powerful, whereas the latter runs a department that has traditionally been small, simple and weak.

We have already dealt with the adverse-selection argument, but the other alternative hypothesis is that reshuffles are merely due to scandals. For example, it may be that the controversial nature or complexity of a portfolio puts some ministers at a greater risk of committing policy errors, and hence greater risk of being forced to resign. If this were the case, PMs would have to reshuffle the portfolio simply to replace the resigning minister. We use data from Dowding and Kang to control for this possibility.⁵⁸ For each portfolio we record the number of ministers who resigned due to (sexual or financial) scandal, departmental or personal policy errors, or in protest. All of these situations force the PM to reshuffle to deal with an unexpected vacancy in the portfolio.

Our ordinary least squares (OLS) regression results are presented in Table 2.⁵⁹ The initial specifications of each model contain only the resignation variable – and clearly the more resignations in a portfolio the greater the turnover in cabinet ministers and in the number

⁵⁴ Personnel changes resulting from a change in the party of government are not counted.

⁵⁵ Patrick Dunleavy *et al.*, *Government on the Web II* (London: The Stationery Office, HC 764 Session 2001–2, National Audit Office 'value for money' study, 2002).

⁵⁶ Michael J. Laver and W. Ben Hunt, *Policy and Party Competition* (New York: Routledge, 1992).

⁵⁷ Laver and Hunt, *Policy and Party Competition*, scored portfolios from 1 to 10 with more influential portfolios receiving lower scores. We reversed this scale and gave scores of 0 to the smaller departments (e.g., the Northern Ireland, Scottish and Welsh Offices) that Laver and Hunt ignored, one point below the weakest (but larger departments) listed by Laver and Hunt.

⁵⁸ Dowding and Kang, 'Ministerial Resignations 1945–97'.

⁵⁹ We use OLS rather than Poisson regression here because OLS is robust in small samples whereas maximum likelihood techniques, like Poisson regression, are not. The Poisson regression results are virtually identical, however.

TABLE 2 *Size of British Cabinet Reshuffles, 1955–94*

	Dependent variable							
	No. cabinet ministers in reshuffle				No. times portfolio affected by reshuffle			
	1	2	3	4	5	6	7	8
Resignations	2.18** (0.91)	0.82 (1.24)	0.80 (1.28)	2.03 (1.24)	4.46*** (1.62)	0.13 (1.75)	-0.57 (1.82)	1.02 (1.80)
Laver & Hunt (weak = 0)		0.71 (0.46)	0.68 (0.48)	1.31*** (0.50)		2.34*** (0.68)	2.37*** (0.67)	3.18*** (0.72)
No. of Agencies in Ministry			0.031 (0.10)	-1.14** (0.53)			0.17 (0.14)	-1.38* (0.78)
Laver & Hunt × No. Agencies				0.19** (0.08)				0.24** (0.118)
Constant	14.78*** (1.33)	13.57*** (1.49)	13.419*** (1.62)	10.04*** (2.06)	23.35*** (2.56)	19.75*** (2.19)	18.95*** (2.26)	14.63*** (2.93)
R ² adjusted	0.24	0.31	0.26	0.44	0.30	0.61	0.62	0.70

Notes: $N = 16$. Standard errors in parentheses. Levels of significance: ***99%, **95%, *90%.

of times that the portfolio was affected by a reshuffle.⁶⁰ These scandal-driven effects are not stable, however, and disappear once the Laver–Hunt portfolio influence scores are added to the models. The third specification adds the number of agencies in the portfolio. The Laver–Hunt portfolio-influence scores continue to work as expected: the more influential the portfolio, the more it was reshuffled. In contrast, the number of agencies in the portfolio does not appear to affect ministerial turnover or the pattern of reshuffling across portfolios. That said, the final specifications reveal a powerful interactive effect between the portfolio’s influence and the number of agencies in the portfolio (i.e., the portfolio’s complexity), with the marginal effect of portfolio influence being amplified by the portfolio’s complexity.⁶¹ Thus, even with such a small sample size our results clearly indicate that powerful and complex portfolios are more likely to be affected by a reshuffle than are weaker and less organizationally complex departments – even after we account for resignations due to scandals, policy failures or protest.⁶²

The 1981 Reshuffles of the Thatcher Government

Ultimately these data and tests cannot inform us as to whether PMs, when they reshuffle their cabinets, are motivated by a desire to limit their ministers’ self-interested behaviour. Autobiographical accounts by PMs of their reshuffles can, however, provide these insights. We use one of these accounts – Margaret Thatcher’s record of the events and motives that led her to reshuffle her cabinet twice in 1981 – to demonstrate the real-world applicability of our model. The Thatcher government’s first term (1979–83) was marked by economic difficulties: global recession, militant unionism, high levels of unemployment and inflation, and unsustainable public debt. Thatcher’s response to these economic conditions was the Medium Term Financial Strategy (MTFS). Purely monetarist in its orientation, the MTFS was a radical break with Keynesian orthodoxy, and as such a central complement to the MTFS was the reduction (rather than an expansion) of government spending generally, and the Public Service Borrowing Requirement (PSRB) particularly. Not all of Thatcher’s ministers shared her enthusiasm for the MTFS. Some (the ‘wets’) were ideologically opposed to the project, while others simply saw limits on the PSBR as threats to their departments.⁶³ Thatcher, however, was convinced that it was imperative to rein in public spending. We note here how closely this case resembles our model: a PM intent on pushing forward in a policy direction that requires ministers to respect budget constraints.

⁶⁰ For the cabinet minister regressions, we are controlling only for cabinet ministers’ resignations, not the resignations of any other senior ministers in the portfolio. To take the most famous example in our dataset, we do not count Profumo’s resignation as affecting the defence department in the cabinet minister regression because Profumo was a minister of state (the Secretary of State for War) in the department, not the cabinet minister. Of course, Profumo’s resignation did mean that the Defence Ministry was targeted by a reshuffle, and for that reason we do count minister of state resignations in the times-affected regressions.

⁶¹ Again, we traced out the interactive effects as in Friedrich, ‘In Defense of Multiplicative Terms in Multiple Regression Equations’.

⁶² The worry with such a small sample size is that the results are driven by one or two outliers. Regression diagnostics indicated only one outlier, however, the Trade and Industry portfolio. Dropping the Trade and Industry portfolio disrupts the curvilinear relationship between personnel numbers and the number of times the portfolios was affected by a reshuffle. The Laver–Hunt variable remains statistically significant, however, and the cabinet minister regression is entirely unaffected.

⁶³ Thatcher, *The Downing Street Years*, p. 123.

By the summer of 1980 it was clear in Thatcher's mind that the 'wets' were trying to undo her economic policies. A cabinet meeting on 10 July 1980 saw the 'wets' argue for a more relaxed PSBR and push for a 'spend and borrow' economic policy.⁶⁴ Thatcher resisted this, though she also noted in her memoirs how difficult it was actually to control spending in some departments, notably the Ministry of Defence, which had already exceeded its annual budget.⁶⁵ The remainder of the summer saw two prominent 'wet' ministers, Ian Gilmour and Norman St John-Stevas, give a series of public lectures in which they pronounced upon the economic shortcomings and social consequences of monetarism.⁶⁶ A third minister, John Biffen, the Chief Secretary to the Treasury – whose job it was to handle the Treasury's annual budget negotiations with departmental ministers – declared to the Conservative party's Parliamentary Finance Committee that he did not share the PM's enthusiasm for the MTFs.⁶⁷ This ministerial behaviour was not in Thatcher's view due to poor judgement or performance, but rather an effort to discredit her entire economic strategy. In Thatcher's words, 'This could not be allowed to continue.'⁶⁸ The PM's decided response was to execute a 'limited' reshuffle her cabinet.⁶⁹ Pointedly, Biffen was transferred from the Treasury to head the Department of Trade. Again, we note three elements of this story that comport with our model: (1) Thatcher's belief that 'bad' ministerial behaviour needed to be nipped in the bud, (2) that this could be achieved with a reshuffle, and (3) that the reshuffle itself actually involved the lateral transfer rather than outright sacking of some of the offenders.

Thatcher estimated that this modest reshuffle would be sufficient to correct her government's economic course, but admits she was mistaken in this assumption. The severe 1981 budget forced further constraints on the PSBR, and these were highly unpopular with her spending ministers.⁷⁰ The matter came to a head in a heated cabinet meeting on the 23 July 1981.⁷¹ The 'wet' ministers argued for increased government spending to combat the recession and that they could not commit to limiting departmental spending without an adequate assessment of the likely political, economic and social implications. Thatcher, in turn, suspected her spending ministers of padding their budgets and wilfully ignoring the PSBR.⁷² The ministers in charge of presenting the government's economic position, Pym and Thorneycroft, actually made public statements critical of the government's economic record. Pym and another minister, Prior, also suggested a neo-corporatist approach to labour policy (an anathema to Thatcher).⁷³ Thatcher viewed these differences between herself and her ministers as fundamental, and exceedingly dangerous: 'So it was quite clear to me that a major reshuffle was needed if our economic policy were to continue and perhaps if I were to remain as Prime Minister.'⁷⁴ Several of the 'wets' were sacked outright – but others, Pym, Prior and Biffen, remained in the cabinet. Again, we feel that this narrative largely mirrors the outlines of our model: faced with ministerial drift in the form of excessive spending and critical public statements or

⁶⁴ Thatcher, *The Downing Street Years*, p. 124.

⁶⁵ Thatcher, *The Downing Street Years*, p. 124.

⁶⁶ Thatcher, *The Downing Street Years*, p. 124.

⁶⁷ Thatcher, *The Downing Street Years*, p. 130.

⁶⁸ Thatcher, *The Downing Street Years*, p. 130.

⁶⁹ Thatcher, *The Downing Street Years*, p. 130.

⁷⁰ Thatcher, *The Downing Street Years*, p. 134–8.

⁷¹ Thatcher, *The Downing Street Years*, p. 148.

⁷² Thatcher, *The Downing Street Years*, p. 148.

⁷³ Thatcher, *The Downing Street Years*, p. 150.

⁷⁴ Thatcher, *The Downing Street Years*, p. 150.

deviations from government policy, the PM reshuffles to limit the political damage. Ministers are not just sacked, however; many are moved laterally.

CONCLUSION

Cabinet reshuffles are traditionally characterized as obstacles to competent and accountable governance. By constantly shifting ministers from portfolio to portfolio reshuffles are seen as robbing cabinet ministers of the expertise and experience required to oversee complex modern bureaucracies. As a consequence unelected bureaucrats gain undue influence over the course of public policy. Our model casts cabinet reshuffles in a less pessimistic light, showing how reshuffles may actually increase accountability. We arrive at this counter-intuitive conclusion by recognition of the fact that intra-party politics is important. In particular, we recognize that individual cabinet ministers have aspirations that do not always serve the best interests of their party or of the cabinet as a whole. Couple this fact with the familiar assumption of the budget-maximizing bureaucrat, and it is clear that preferences of ministers and bureaucrats have something in common: both prefer higher budgets (though perhaps for different reasons). The necessities of modern public administration nevertheless dictate that PMs must delegate power to these agents, with the end result that policy is altered in ways that do not always accord with the collective position of the cabinet, the governing coalition and perhaps even of the electorate.

Reshuffles do not directly limit the agency loss that flows from the ministers' moral hazard. Rather, reshuffles work by sensitizing ministers to the future consequences of their actions. Specifically, given the relationship between departmental spending and policy posited here, higher spending by a minister effectively allows a successor to generate larger deviations from the party's platform (for which the initial minister, like all party members, suffers) than would have been possible had the initial minister limited his spending. Hence, if reshuffles are possible, ministers' preferences for bigger budgets are tempered by a concern for not straying too far from the official party policy. This result hinges, of course, on the PM exerting some oversight over cabinet ministers, but it obtains even when reshuffles generally (or the oversight specifically) is costly. Our model leads, then, to quite different conclusions about the relationship between the frequency of cabinet reshuffles and democratic accountability. Whereas the traditional view is that frequent cabinet reshuffles undercut ministers' ability to gain enough expertise to adequately direct and oversee their civil servants, we see frequent reshuffles as limiting the agency-loss that the PM and cabinet incur by delegating to self-interested agents, that is, to cabinet ministers and their civil servants. This is not to say – and we should be clear on this – that there are no 'competency' costs to constantly moving ministers around. Our model does not speak directly to these sorts of costs. That said, our framework offers an explanation of why reshuffles benefit the PM and, why PMs might still commit to reshuffling their cabinets even if reshuffling were costly in some fashion. Implicitly, we are suggesting a trade-off between ministerial competence and ministerial accountability – and a signal contribution of our work here is to underscore the accountability side of this trade-off.

Our conclusions are, at least in part, due to the recognition of the fact that the problems inherent in ministerial (or bureaucratic) delegation come in different varieties. A great majority of the existing literature has focused on factors that would fall under the rubric of adverse selection problems of delegation (i.e., the identification and proper allocation of ministerial talent). The results presented here are innovative because they clearly point out that cabinet reshuffles also have an impact on the moral hazard aspects of delegation. We think this an important contribution because we point out that parliamentary

government is actually better equipped to deal with *ex-post* opportunism by elected officials and functionaries than received accounts admit. We back up our claim with empirical evidence that adverse selection explanations of reshuffles fall short in many respects. Even PMs who cannot unilaterally hire or fire ministers still reshuffle. These reshuffles do not appear designed expressly to match ministerial talent to portfolios. Instead, reshuffles appear to target disproportionately powerful and organizationally complex portfolios – precisely those departments in which minor deviations can be costly and which cannot be directly monitored with ease.

It is also worthwhile to compare and contrast our findings with Huber and Lupia work on government stability and delegation.⁷⁵ Huber and Lupia conclude, like us, that the effects of cabinet reshuffles cannot be taken for granted. Their primary focus, however, is on the civil servant's reaction to potential changes in ministerial preferences. Their findings indicate that cabinet instability does not always disadvantage incumbent ministers but, more interestingly, when it does, the so-called 'ally' principle does not hold, i.e., the more similar the preferences of the minister and the civil servant the worse off the minister is.⁷⁶ Huber and Lupia's work shows that relationship between cabinet reshuffles and agency-loss is not as airtight as many have previously thought. Taking a slightly different approach – focusing on the delegation from the PM to cabinet ministers and the divergence in their interests – we come to a similar but stronger conclusion, stronger because we show that cabinet reshuffles can actually reduce agency loss and increase the PM's welfare.

Of course, we have assumed that the PM's ability to reshuffle her cabinet is largely unrestricted, and certainly this is not always the case. PMs of coalition governments, for example, tend to face constraints on their ability to reshuffle their cabinets, most importantly the need to keep the coalition together. Coalition governments vary in terms of the rules used for the selection of ministers, but in some cases coalition formation is not only contingent on the allocation of ministerial portfolios to the political parties, but also on the identity of individual ministers. Under such conditions, PMs may not be able to rely solely on cabinet reshuffles to fight ministerial drift, particularly when coalition agreements are specific and the parties stand firmly behind their written agreements. So, for example, where the allocation of ministries to parties follows their ideological orientation, i.e., a socialist gets the ministry of social services, the parties may receive externalities from their ministers' 'excessive' spending and thus be less inclined to accept a reshuffle. Our conclusion, then, is that cabinet reshuffles generally provide an effective mechanism for containing moral hazard, but in certain circumstances other means of constraining moral hazard may have to be introduced. That said, the broader organizational lesson of our model should not be displaced by these caveats – any time a principal delegates power to multiple agents there is an opportunity to reduce moral hazard by reshuffling those agents.⁷⁷

⁷⁵ Huber and Lupia, 'Cabinet Instability and Delegation in Parliamentary Democracies'.

⁷⁶ John Bendor, Amihai Glazer and Tom Hammond, 'Theories of Delegation', *Annual Review of Political Science*, 4 (2001), 235–69.

⁷⁷ This result mirrors similar results from economics, and indeed, it is not uncommon to see real-world agents reshuffled, e.g., Arya and Mittendorf, 'Using Job Rotation to Extract Employee Information'. On the lateral movement of civil servants see, e.g., Edward C. Page and Vincent Wright, *Bureaucratic Élités in Western European States: A Comparative Analysis of Top Officials* (Oxford: Oxford University Press, 1999), various chapters. The rules regarding rotation within the foreign service are often quite explicit. For example, foreign servants in Germany can expect to be rotated every 3–5 years and in Iceland rotations occur every 4 years. Finally, Pinochet's strategy for staying in power supposedly relied heavily on the ability to move his generals around – as well as getting rid of them.

APPENDIX A

Lemma 1

The optimal policy decisions for minister i when cabinet reshuffles are prohibited equal $s_i^* = \min \{\omega, \gamma_i/2\}$ and $z_i^* = \min \{\omega, (\gamma_i/2) - s_i\}$. The policy outcome (at the end of the game) equals $(\min \{2\omega, \gamma_1/2\}, \min \{2\omega, \gamma_2/2\})$.

Proof: The ministers face a simple constrained optimization problem. Under the non-reshuffle regime M_i 's utility function can be written:

$$u_i = -(s_i^2 + (s_i + z_i)^2 + s_{\sim i}^2 + (s_{\sim i} + z_{\sim i})^2) + \gamma_i(s_i + (s_i + z_i)). \quad (6)$$

The unconstrained f.o.c. of u_i w.r.t. z_i equals $\partial u_i/\partial z_i = -2(s_i + z_i) + \gamma_i = 0$. Solving for the second period spending yields $z_i = (\gamma_i/2) - s_i$. The effect of the inequality constraint, $z_i \leq \omega$, is straightforward as u_i is concave in z_i and therefore $z_i^* = \min \{\gamma_i/2 - s_i, \omega\}$. The f.o.c. of u_i w.r.t. s_i equals $\partial u_i/\partial s_i = -2s_i - 2(s_i + z_i) + 2\gamma_i = 0$. Suppose first that $\gamma_i/2 < \omega$. Then it must be the case that $z_i^* = \gamma_i/2 - s_i$ and the f.o.c. can be rewritten as $-2s_i - 2(s_i + \gamma_i/2 - s_i) + 2\gamma_i = 0$, which reduces to $s_i^* = \gamma_i/2$. Now suppose to the contrary that $\gamma_i/2 > \omega$. Then the $\partial u_i/\partial s_i$ reduces to either (i) $-2s_i - 2(s_i + \gamma_i/2 - s_i) + 2\gamma_i$ or (ii) $-2s_i - 2(s_i + \omega) + 2\gamma_i$. If (i), then $\partial u_i/\partial s_i$ simplifies to $\gamma_i - 2s_i$ which is positive for all $s_i \in [0, \gamma_i/2)$, i.e., M_i 's utility is increasing in the interval. Since $\gamma_i/2 > \omega$ then $s_i^* = \omega$. If (ii), then $\partial u_i/\partial s_i$ simplifies to $2\gamma_i - 4s_i - 2\omega$. We can show that $\partial u_i/\partial s_i > 0$ in the interval $s_i \in [0, \gamma_i/2)$ if $2\gamma_i - 4s_i - 2\omega > 0$ – or with some simple algebra $\gamma_i/2 - s_i > \omega/2$. But by definition of z_i^* , $z_i^* = \omega$ implies $\gamma_i/2 - s_i > \omega$. Thus, $\partial u_i/\partial s_i > 0$ in the interval and the optimal choice is the corner solution $s_i^* = \omega$. ■

Lemma 2

Assume that a cabinet reshuffle takes place, $r = 1$, and $\omega = \infty$. Then $s_i^* = \gamma_i/2$ and $z_i^* = (\gamma_i - \gamma_j)/2$, $i \neq j$.

Proof: The ministers' optimal level of spending can be found by backwards induction. When $r = 1$, Minister i 's utility equals

$$u_i = -(s_i^2 + (s_i + z_{\sim i})^2 + s_{\sim i}^2 + (s_{\sim i} + z_i)^2) + \gamma_i(s_i + (s_{\sim i} + z_i)). \quad (7)$$

Differentiating the expression with respect to Minister i 's spending in the second period we obtain $-2(s_{\sim i} + z_i) + \gamma_i = 0$. The optimal level of second period spending is then $z_i^* = (\gamma_i - 2s_{\sim i})/2$. Substituting the optimal level of second period spending into Equation 7 and differentiating with respect to first period spending yields: $s_i^* = \gamma_i/2$. Substituting $s_{\sim i}^* = \gamma_{\sim i}/2$ into the expression for z_i^* then yields $z_i^* = (\gamma_i - \gamma_{\sim i})/2$. ■

PROPOSITION 1. The game has a ministerial restraint equilibrium if one of the following conditions is satisfied for some $i \in \{1, 2\}$:

- (a) $\gamma_i < 2\omega$ and $\gamma_{\sim i} > \frac{(\gamma_i + 2\omega)}{\sqrt{2}}$,
- (b) $2\omega < \gamma_i \leq 6\omega$ and $\gamma_{\sim i} > \frac{\sqrt{-2\gamma_i^2 + 24\gamma_i\omega - 8\omega^2}}{2}$.

The equilibrium strategies are:

$$s_i^* = \begin{cases} \frac{\gamma_i - 2\omega}{4} & \text{if either condition is satisfied for } i \\ \min \left\{ \omega, \frac{\gamma_i}{2} \right\} & \text{else} \end{cases}$$

$$z_i^* = \min \left\{ \omega, \frac{\gamma_i}{2} - s_{\sim i} \right\}.$$

If i satisfies either condition then the equilibrium policy outcome in portfolio i equals $x_i^2 = (\gamma_i + 2\omega)/4$.

Proof: The conditions are derived by a process of backwards induction. Following the argument in Lemma 1, the optimal choice of z_i under the reshuffle regime equals $z_i^* = \min\{\omega, \gamma_i/2 - s_{-i}\}$. Substituting z_{-i}^* (we leave z_i^* as it does not depend on s_i when $r = 1$) into the M_i 's utility function yields:

$$u_i = \begin{cases} -(s_i^2 + (s_i + \omega)^2 + s_{-i}^2 + (s_{-i} + z_i^*)^2) + \gamma_i(s_i + s_{-i} + z_i^*), & \text{if } s_i \leq \frac{\gamma_{-i}}{2} - \omega, \\ -\left(s_i^2 + -\left(\frac{\gamma_{-i}}{2}\right)^2 + s_{-i}^2 + (s_{-i} + z_i^*)^2\right) + \gamma_i(s_i + s_{-i} + z_i^*), & \text{else.} \end{cases} \tag{8}$$

Minister i 's optimal strategy is to maximize Equation 8 with respect to s_i subject to the constraint $s_i \leq \omega$. Differentiating u_i with respect to s_i yields the f.o.c. for an interior solution:

$$\frac{\partial u_i}{\partial s_i} = \begin{cases} -4s_i - 2\omega + \gamma_i = 0, & \text{if } s_i \leq \frac{\gamma_{-i}}{2} - \omega, \\ -2s_i + \gamma_i = 0, & \text{else.} \end{cases} \tag{9}$$

Solving Equation 9 for s_i and considering the possibility that the constraint is binding, optimality requires that $s_i^* \in \{(\gamma_i - 2\omega)/4, \gamma_i/2, \omega\}$. That is, if the minister finds it optimal to constrain his spending then $s_i^* = (\gamma_i - 2\omega)/4$ but otherwise he simply spends $\gamma_i/2$ or ω if his preferred level of spending is greater than the PM's oversight permits. There are thus two cases that correspond to whether M_i can reach his preferred level of spending or not: (a) $\gamma_i/2 < \omega$ and (b) $\gamma_i/2 \geq \omega$.

Case (a). We begin by considering $\gamma_i/2 < \omega$. First, note that M_i will only constrain his spending if it influences M_{-i} 's level of spending. Thus, M_i will only constrain his spending if $\gamma_{-i}/2 > (\gamma_i - 2\omega)/4 + \omega$. Now suppose that $\gamma_i/2 + \omega \geq \gamma_{-i}/2 > (\gamma_i + 2\omega)/4$, i.e., only by constraining his spending does M_i prevent M_{-i} from reaching his preferred level of spending $\gamma_{-i}/2$. After substituting and cancelling out the terms that appear on both sides of the inequality, $u_i((\gamma_i - 2\omega)/4) > u_i(\gamma_i/2)$ reduces to:

$$\begin{aligned} -\left(\frac{\gamma_i - 2\omega}{4}\right)^2 - \left(\frac{\gamma_i + 2\omega}{4}\right)^2 + \gamma_i\left(\frac{\gamma_i - 2\omega}{4}\right) &\geq -\left(\frac{\gamma_i}{2}\right)^2 - \left(\frac{\gamma_{-i}}{2}\right)^2 + \gamma_i\frac{\gamma_i}{2} \\ \Rightarrow \gamma_{-i} &\geq \frac{(\gamma_i + 2\omega)}{\sqrt{2}}. \end{aligned} \tag{10}$$

It must be verified that the inequality in Expression 11 satisfies our initial supposition. Consider first the supposition that $\gamma_{-i}/2 > (\gamma_i + 2\omega)/4$. Substituting for γ_{-i} yields $(\gamma_i + 2\omega)/2\sqrt{2} > (\gamma_i + 2\omega)/4$, i.e., there always exists a γ_{-i} such that the supposition remains true. It remains to check the supposition that $(\gamma_i/2) + \omega \geq \gamma_{-i}/2$. It is obvious that values of γ_{-i} can be found that violate this part of the supposition. Note, however, that substantively the supposition $(\gamma_i/2) + \omega \geq \gamma_{-i}/2$ limits M_{-i} 's level of spending when M_i does not constrain his spending. Hence, relaxing the supposition does not affect M_i 's utility when M_i constrains his spending and reduces his utility when he does not. Thus, if the M_i prefers to constrain his spending when M_{-i} 's ambition equals $\hat{\gamma}_{-i}$ then M_i will also do so for all $\gamma_{-i} > \hat{\gamma}_{-i}$.

This is easily verified by supposing that $\gamma_{-i}/2 > (\gamma_i + 2\omega)/2$. Again, substituting into $u_i(\gamma_i - 2\omega)/4 > u_i(\gamma_i/2)$ and cancelling out terms yields:

$$\begin{aligned} -\left(\frac{\gamma_i - 2\omega}{4}\right)^2 - \left(\frac{2\omega + \gamma_i}{4}\right)^2 + \gamma_i\left(\frac{\gamma_i - 2\omega}{4}\right) &\geq -\left(\frac{\gamma_i}{2}\right)^2 - \left(\frac{\gamma_i}{2} + \omega\right)^2 + \gamma_i\frac{\gamma_i}{2} \\ \Rightarrow \gamma_i^2 + 4\gamma_i\omega + 4\omega^2 &\geq 0, \end{aligned} \tag{12}$$

which always holds true as $\gamma_i, \omega \geq 0$. Thus, the inequality in Expression 11 is the only constraint, i.e.,

$$s_i^* = \frac{\gamma_i - 2\omega}{4} \quad \text{if } \frac{\gamma_i}{2} < \omega \quad \text{and} \quad \gamma_{-i} > \frac{\gamma_i + 2\omega}{\sqrt{2}}.$$

Case (b). Now suppose $\gamma_i/2 > \omega$. Then $s_i^* \in \{(\gamma_i - 2\omega)/4, \omega\}$. It is optimal for M_i to choose $s_i = (\gamma_i - 2\omega)/4$ if $u_i((\gamma_i - 2\omega)/4) > u_i(\omega)$. As before, note that M_{-i} 's ambition will influence M_i 's incentive to restrain his spending, which has an effect through the term $u_i(\omega)$. There are three subcases. First, when $(\gamma_i + 2\omega)/4 > \gamma_{-i}/2$, the spending in the portfolio in the second period will equal $\gamma_{-i}/2$ but we can dispense with this case right away because M_i 's restraint would have no effect on second period spending. Second,

suppose $\gamma_{\sim i}/2 \geq 2\omega$, which implies that if M_i chooses $s_i = \omega$ then the total spending in the portfolio in the second period will equal 2ω . Substituting into $u_i((\gamma_i - 2\omega)/4) > u_i(\omega)$ and simplifying yields:

$$-\left(\frac{\gamma_i - 2\omega}{4}\right)^2 - \left(\frac{2\omega + \gamma_i}{4}\right)^2 + \gamma_i\left(\frac{\gamma_i - 2\omega}{4}\right) \geq -\omega^2 - (2\omega)^2 + \gamma_i\omega \tag{14}$$

$$\Rightarrow \gamma_i^2 - 12\gamma_i\omega + 36\omega^2 > 0, \tag{15}$$

which is satisfied if $\gamma_i < 6\omega$. Note that in this subcase the benefit of restraining is at its greatest (because $M_{\sim i}$ would like to spend even more) and M_i will never, here or elsewhere, find it in his interest to restrain his spending if $\gamma_i > 6\omega$. Thus, if $2\omega < \gamma_i < 6\omega$ and $\gamma_{\sim i} > 4\omega$ then $s_i^* = (\gamma_i - 2\omega)/4$. In the final subcase $2\omega > \gamma_{\sim i}/2 \geq (\gamma_i + 2\omega)/4$, which implies that $M_{\sim i}$ will reach his optimal level of spending in the second period, i.e., $\gamma_{\sim i}/2$, if $s_1 = \omega$. Cancelling out the terms that appear on both sides of the inequality, $u_i((\gamma_i - 2\omega)/4) > u_i(\omega)$ simplifies to:

$$-\left(\frac{\gamma_i - 2\omega}{4}\right)^2 - \left(\frac{2\omega + \gamma_i}{4}\right)^2 + \gamma_i\left(\frac{\gamma_i - 2\omega}{4}\right) \geq -\omega^2 - \left(\frac{\gamma_{\sim i}}{2}\right)^2 + \gamma_i\omega \tag{16}$$

$$\Rightarrow \gamma_i^2 + 4\omega^2 + 2\gamma_{\sim i}^2 > 12\gamma_i\omega. \tag{17}$$

Solving the inequality for $\gamma_{\sim i}$ yields:

$$\gamma_{\sim i} > \frac{\sqrt{-2\gamma_i^2 + 24\gamma_i\omega - 8\omega^2}}{2}. \tag{18}$$

It is a simple matter to check that $-2\gamma_i^2 + 24\gamma_i\omega - 8\omega^2$ is a positive number for the range of values of γ_i that we are interested in, i.e., $2\omega < \gamma_i < 6\omega$. Thus, if $2\omega < \gamma_i \leq 6\omega$ and $4\omega > \gamma_{\sim i} > \sqrt{(-2\gamma_i^2 + 24\gamma_i\omega - 8\omega^2)}/2$ then $s_i^* = (\gamma_i - 2\omega)/4$. Combining the conditions of the second and the third subcase, we have shown that if $2\omega < \gamma_i \leq 6\omega$ and $\gamma_{\sim i} > \sqrt{(-2\gamma_i^2 + 24\gamma_i\omega - 8\omega^2)}/2$ then $s_i^* = (\gamma_i - 2\omega)/4$. ■

APPENDIX B: ‘RATIONAL RESHUFFLES’

Assume throughout that $\gamma_2 > \gamma_1$. It follows that the minister with a preference for a higher level of spending will spend at least as much as the other minister in period 1: $s_2^* \geq s_1^*$. It is possible that a minister will be willing to ‘underspend’ in period 1 to prevent a reshuffle from taking place, but as will become clear shortly, it is sufficient for Minister 2 to simply spend as much as Minister 1 in the first period to prevent a reshuffle when reshuffles are costly. If the PM is to benefit from a reshuffle (when costly) it must, therefore, be the case that:

$$s_2 + \omega > \frac{\gamma_1}{2}, \tag{19}$$

$$s_1 + \omega > \frac{\gamma_2}{2}. \tag{20}$$

That is, one of the ministers obtains his ideal level of spending while the other one falls short. Lemma 3 shows that these conditions are necessary and sufficient.

Lemma 3

A cabinet reshuffle is optimal, $r^* = 1$, for some $c \in \mathbb{R}^+$ if and only if $s_1 + \omega < \gamma_2/2$, $s_2 + \omega > \gamma_1/2$, and $s_2 > s_1$.

Proof: Lemma 1 shows that the ministers seek to set the spending as close to their optimal level of spending ($\gamma_i/2$) as they can in the final stage of the game, i.e., $s_i^* = \min\{\omega, \gamma_i/2 - (1-r)s_i - rs_{\sim i}\}$, $i \in \{1, 2\}$. Let x^r denote the second period policy outcome when the PM reshuffles the cabinet and $x^{\sim r}$ when she does not. Pick arbitrary s_1 and s_2 .

Sufficiency: Suppose the conditions of the lemma hold and that $c = 0$. If the PM reshuffles, $r = 1$, the second period policy outcome equals $x^r = (s_1 + \omega, \gamma_1/2)$. If the PM does not reshuffle, $r = 0$, the policy outcome, denoted $x^{\sim r}$, will take one of the following values: (i) $(\gamma_1/2, s_2 + \omega)$, (ii) $(s_1 + \omega, s_2 + \omega)$, (iii) $(\gamma_1/2, \gamma_2/2)$,

or (iv) $(s_1 + \omega, \gamma_2/2)$. Considering each in turn, we show that the policy drift is lower in each case given the above conditions. *Case (i):* The condition $s_1 < s_2$ implies that $u_{PM}(x^r) > u_{PM}(x^{-r})$. *Case (ii):* By $s_2 + \omega > \gamma_1/2$ we have $u_{PM}(x^r) > u_{PM}(x^{-r})$. *Case (iii):* By $s_1 + \omega < \gamma_2/2$ we have $u_{PM}(x^r) > u_{PM}(x^{-r})$. *Case (iv):* By $\gamma_2 > \gamma_1$ we have $u_{PM}(x^r) > u_{PM}(x^{-r})$. As in each of the four cases the PM strictly prefers reshuffling, there exists $c \in \mathbb{R}^+$ such that $u_{PM}(x^r) \leq u_{PM}(x^{-r})$.

Necessity: First, suppose that contrary to the statement of the lemma $s_1 + \omega < \gamma_2/2$ and oversight constrains neither minister when a reshuffle takes place, i.e., $s_i + \omega > \gamma_{-i}/2, \forall i \in \{1, 2\}$. Then $x^r = (\gamma^2/2, \gamma_1/2)$. When the cabinet is not reshuffled, $x^{-r} = (\gamma_1/2, \min\{\gamma_2/2, s_2 + \omega\})$. The PM prefers $r = 0$ because when she does not reshuffle her worst outcome is $x^{-r} = (\gamma_1/2, \gamma_2/2)$, or $x^{-r} = x^r$. Thus, $u_{PM}(x^{-r}) > u_{PM}(x^r), \forall c > 0$ and $r = 1$ is not an optimal strategy. Secondly, suppose that $s_2 + \omega > \gamma_1/2$ fails and oversight constrains both ministers, i.e., $s_i + \omega < \gamma_{-i}/2, \forall i \in \{1, 2\}$, if a reshuffle takes place. Then $x^r = (s_1 + \omega, s_2 + \omega)$. Without reshuffle $x^{-r} = (\min\{s_1 + \omega, \gamma_1/2\}, s_2 + \omega)$. It is immediate that the PM will prefer $r = 0$ since a reshuffle does not influence the outcome in portfolio 2 and in portfolio 1 the outcome will at most be $s_1 + \omega$ (but in some cases only $\gamma_1/2$). Thus, $u_{PM}(x^{-r}) > u_{PM}(x^r), \forall c > 0$. Finally, suppose $s_1 < s_2$. If the first two conditions hold then $x^r = (s_1 + \omega, \gamma_1/2)$ and a reshuffle may give $x^{-r} = (\gamma_1/2, s_2 + \omega)$. Then $u_{PM}(x^{-r}) > u_{PM}(x^r)$ and $r = 1$ is not an optimal strategy. ■

The above lemma demonstrates that cabinet reshuffles can be equilibrium strategies in the subgame starting with the reshuffle period. Showing that cabinet reshuffles take place on the equilibrium path of the full game is a more tedious endeavour, which requires checking numerous cases. Rather than considering all the possible cases in which cabinet reshuffles may occur, we focus on the one case that is most pertinent to our argument about the effect of cabinet reshuffles on the ministers' moral hazard. That is, we focus on the subset of ministerial restraint equilibria where the ministers, anticipating a reshuffle, decide to contain their spending. The second period equilibrium strategies of the ministers were derived in Lemma 1, and Lemma 3 shows the PM's optimal strategy. It only remains to derive the ministers' equilibrium strategies in the first stage of the game. Proposition 1 provides the ministers' equilibrium strategies when reshuffles do (or do not) occur when it is assumed that their actions do not influence the PM's action. It is, however, possible that by changing their level of spending in the first period the ministers can induce the PM not to reshuffle (or to reshuffle) the cabinet.

Propositions 2 and 3 consider this possibility and show that a *ministerial restraint equilibrium* exists if the cost of reshuffling the cabinet is sufficiently low. Proposition 2 details the conditions when $\gamma_1 < 2\omega$ while Proposition 3 considers the case when $\gamma_1 > 2\omega$.

PROPOSITION 2. *A ministerial restraint equilibrium exists for some $c \in \mathbb{R}^+$ if $\gamma_1 < 2\omega$ and $\gamma_2 > (\gamma_1 + 2\omega)/\sqrt{2}$. The path of play is $s_1^* = (\gamma_1 - 2\omega)/4, s_2^* = \omega, r^* = 1, z_1^* = (\gamma_1/2) - \omega$, and $z_2^* = \omega$.*

Proof. Suppose $\gamma_1 < 2\omega$ and $\gamma_2 > (\gamma_1 + 2\omega)/\sqrt{2}$. Consider the strategy profile in the statement of the proposition. By Lemma 1 and Proposition 1, z_i^* is optimal for $i = 1, 2$. Turning to the PM's reshuffle decision, by substituting $s_i^*, i = 1, 2$ into the conditions of Lemma 3 we obtain $(\gamma_1 - \omega)/2 + \omega < \gamma_2/2$ and $2\omega > \gamma_1/2$, which hold by our initial supposition. Under these conditions the policy component of the PM's utility strictly increases when she reshuffles the cabinet. Thus, there exists $c \in \mathbb{R}^+$ such that the policy benefit of reshuffling outweighs the cost and $r^* = 1$ is optimal. It remains to check whether $s_i^*, i = 1, 2$, are equilibrium strategies. If M_1 spends $\hat{s}_1 = s_2^* + \epsilon = \omega + \epsilon$ or $\hat{s}_1 > \gamma_2/2 - \omega + \epsilon$, the PM will prefer not to reshuffle as the conditions of lemma 3 would no longer hold. Furthermore, the lower of these values will represent the minimum deviation from s_1^* necessary to prevent a reshuffle. The size of ϵ depends on the cost of reshuffling the cabinet. We proceed by assuming $\epsilon = 0$ as it represents the limit of the possibility of costly reshuffles, i.e., if the PM receives positive benefits from reshuffling when $c = 0$ then there must also exist a $c > 0$, but small, such that reshuffling remains optimal. Let $\hat{r} = 0$. As shown by proposition 1, s_1^* is optimal provided that a reshuffle occurs, i.e., $u_1(s_1^*, s_2^*, r^*) \geq u_1(s_1, s_2^*, r^*), \forall s_1 \in [0, \omega]$. Let \hat{s}_1 denote M_1 's optimal choice if M_1 acts to prevent a reshuffle, i.e., M_1 chooses $\hat{s}_1 \in \{\omega, \gamma_2/2 - \omega\}$ such that it maximizes his utility. Because $s_2^* = \omega$, note that $u_1(\hat{s}_1, s_2^*, r^*) \geq u_1(\hat{s}_1, s_2^*, \hat{r})$, i.e., a reshuffle does not influence M_1 's spending in the second period whereas it may reduce M_2 's spending. The two inequalities then imply that $u_1(s_1^*, s_2^*, r^*) \geq u_1(\hat{s}_1, s_2^*, \hat{r})$. Finally, since \hat{s}_1 was defined as the optimal choice conditional on a reshuffle occurring, \hat{s}_1 may not be sufficiently high to prevent a reshuffle, i.e., if $\hat{s}_1 < (\gamma_2/2) - \omega$. Thus, to prevent a cabinet reshuffle M_1 may have to choose $s_1 > \hat{s}_1$ but the optimality of \hat{s}_1 when $\hat{r} = 0$ implies $u_1(\hat{s}_1, s_2^*, \hat{r}) > u_1(s_1, s_2^*, \hat{r})$. Thus, s_1^* is optimal.

M_2 can prevent a reshuffle in two ways. First, setting $s_2 = s_1^*$ will induce the PM not to reshuffle, but to do so M_2 must reduce his first period payoff without increasing his second period payoff, and therefore $s_2 = s_1^*$ is not a beneficial deviation. In the limit as $c \rightarrow 0$, the value of s_1^* is the minimum deviations from s_2^* needed to prevent a reshuffle. To see why this is the case compare the utility associated with the two actions. If $s_2 = \omega$, and a reshuffle takes place, M_2 's utility equals:

$$u_2(\omega; \bullet) = -\left(\frac{\gamma_1 - 2\omega}{4}\right)^2 - \left(\frac{\gamma_1 + 2\omega}{4}\right)^2 - \omega^2 - \left(\frac{\gamma_1}{2}\right)^2 + \gamma_2\left(\omega + \frac{\gamma_1 + 2\omega}{4}\right). \quad (21)$$

When M_2 acts to prevent a reshuffle and $s_2 = s_1^* = (\gamma_1 - 2\omega)/4$ his utility equals:

$$u_2\left(\frac{\gamma_1 - 2\omega}{4}; \bullet\right) = -\left(\frac{\gamma_1 - 2\omega}{4}\right)^2 - \left(\frac{\gamma_1}{2}\right)^2 - \left(\frac{\gamma_1 - 2\omega}{4}\right)^2 - \left(\frac{\gamma_1 + 2\omega}{4}\right)^2 + \gamma_2\left(\frac{\gamma_1 - 2\omega}{4} + \frac{\gamma_1 + 2\omega}{4}\right). \quad (22)$$

Subtracting $u_2((\gamma_1 - 2\omega)/4; \bullet)$ from $u_2(\omega; \bullet)$ yields:

$$\left(\frac{\gamma_1 - 2\omega}{4}\right)^2 - \omega^2 + \gamma_2\left(\frac{6\omega - \gamma_1}{4}\right). \quad (23)$$

If this quantity is positive then M_2 prefers $s_2^* = \omega$. The first term is positive. Since $\gamma_1 < 2\omega$, the last term can never be smaller than $\gamma_2\omega$. Taken together, the last two terms will never be smaller than $\gamma_2\omega - \omega^2$ and only takes a negative value if $\gamma_2 < \omega$. That would, however, contradict the supposition that $\gamma_2 > (\gamma_1 + 2\omega)/\sqrt{2}$, i.e., if $\gamma_1 = 0$ then the condition reduces to $\gamma_2 > \sqrt{2}\omega$. Secondly, since the PM will only find it in his interest to reshuffle if $s_2 + \omega > \gamma_1/2$, M_2 can prevent a reshuffle by spending $s_2 = (\gamma_1/2) - \omega$. This can only be beneficial for M_2 if $s_2 = (\gamma_1/2) - \omega > s_1^* = (\gamma_1 - 2\omega)/4$ as otherwise M_2 could simply choose $s_2 = s_1^*$. Solving the inequality for γ_1 gives us $2\omega < \gamma_1$, which contradicts the initial supposition and $s_2^* = \omega$ is optimal for M_2 . ■

PROPOSITION 3. A ministerial restraint equilibrium exists for some $c \in \mathbb{R}^+$ if:

- (i) $2\omega < \gamma_1 < \frac{10}{3}\omega$ and
- (ii) $\gamma_2 > \max\left\{\frac{\sqrt{-2\gamma_1^2 + 24\gamma_1\omega - 8\omega^2}}{2}, \frac{4\omega\gamma_1 - \gamma_1^2}{10\omega - 3\gamma_1}\right\}$.

The path of play is $s_1^* = (\gamma_1 - 2\omega)/4$, $s_2^* = \omega$, $r^* = 1$, $z_1^* = \gamma_1/2 - \omega$, and $z_2^* = \omega$.

Proof. The proof is by backwards induction. Beginning at the last stage, lemma 1 and proposition 1 establish that $z_i^* = \min\{\omega, \gamma_i/2 - s_i^*\}$ when $r = 1$. Condition (i) implies that $\omega > \gamma_1/2 - s_2^*$ so z_1^* is optimal. Condition (ii) implies that $s_1^* + \omega = (\gamma_1 + 2\omega)/4 < \gamma_2/2$ so z_2^* is optimal. The PM's reshuffle is optimal if $s_2 + \omega > \gamma_1/2$ and $s_1 + \omega < \gamma_2/2$. If $s_2^* = \omega$ the first condition equals $2\omega > \gamma_1/2$, which is implied by $2\omega < \gamma_1 \leq (10/3)\omega$. When $s_1^* = (\gamma_1 - 2\omega)/4$, the second condition for an optimal reshuffle becomes $\gamma_2 > (\gamma_1 + 2\omega)/2$. By assumption, $\gamma_2 > (\sqrt{-2\gamma_1^2 + 24\gamma_1\omega - 8\omega^2})/2$ so it must be shown that $(\sqrt{-2\gamma_1^2 + 24\gamma_1\omega - 8\omega^2})/2 \geq (\gamma_1 + 2\omega)/2$, $\forall \gamma_1 \in [2\omega, 4\omega]$. Squaring both sides of the inequality (both of which are positive for all $\gamma_1 \in [2\omega, 4\omega]$) and simplifying yields $-3\gamma_1^2 + 20\gamma_1\omega - 12\omega^2 > 0$, which can easily be verified to hold when $2\omega < \gamma_1 < 4\omega$. Reshuffling, $r^* = 1$, is therefore an optimal choice for the PM. It remains to check whether s_i^* , $i = 1, 2$, is optimal. Consider M_1 's decision first. Condition (ii) and proposition 1 imply that s_1^* is optimal if a reshuffle occurs. By lemma 3, M_1 can induce the PM not to reshuffle by choosing s_1 such that $s_1 \geq s_2^*$ or $s_1 + \omega > \gamma_2/2$. By lemma 1 and $\gamma_1 > 2\omega$ the optimal spending for M_1 , subject to preventing reshuffling, is $\hat{s}_1 = \omega$. In the limit as $c \rightarrow 0$, \hat{s}_1 is the minimum deviations from s_i^* necessary to prevent a reshuffle. Let $\hat{r} = 0$ denote that the cabinet is not reshuffled. By optimality of s_1^* when reshuffles occur $u_1(s_1^*, s_2^*, r^*) \geq u_1(\hat{s}_1, s_2^*, r^*)$. As $s_2^* = \omega$ it follows that $u_1(s_1^*, s_2^*, r^*) \geq u_1(\hat{s}_1, s_2^*, \hat{r})$. Therefore, $u_1(s_1^*, s_2^*, r^*) \geq u_1(\hat{s}_1, s_2^*, \hat{r})$ and s_1^* is optimal. Now consider M_2 's strategy. M_2 's utility from spending $s_2^* = \omega$ equals:

$$u_2(\omega; \bullet) = -\left(\frac{\gamma_1 - 2\omega}{4}\right)^2 - \left(\frac{\gamma_1 + 2\omega}{4}\right)^2 - \omega^2 - \left(\frac{\gamma_1}{2}\right)^2 + \gamma_2\left(\omega + \frac{\gamma_1 + 2\omega}{4}\right). \quad (24)$$

Again, M_2 can prevent a reshuffle by spending $s_2 = s_1^*$ or $s_2 < (\gamma_1/2) - \omega$. As u_2 is concave in s_1 when a reshuffle does not take place, M_2 will prefer the highest level of spending that induces the PM not to reshuffle. Since by assumption $\gamma_1 > 2\omega$, $s_1^* < (\gamma_2/2) - \omega$. Thus, the most profitable deviation that induces a cabinet

reshuffle is $s_1 = \gamma_2/2 - \omega$, which in the limit as $c \rightarrow 0$, is the smallest deviations from s_i^* that prevents the PM from reshuffling. It remains to check if M_2 prefers spending $s_2 = (\gamma_1/2) - \omega$, which is also sufficient to prevent a reshuffle, to spending s_2^* . Now consider M_2 's strategy. M_2 's utility from spending $s_2^* = \omega$ equals:

$$u_2(\omega; \bullet) = -\left(\frac{\gamma_1 - 2\omega}{4}\right)^2 - \left(\frac{\gamma_1 + 2\omega}{4}\right)^2 - \omega^2 - \left(\frac{\gamma_1}{2}\right)^2 + \gamma_2\left(\omega + \frac{\gamma_1 + 2\omega}{4}\right). \tag{25}$$

When M_2 acts to prevent a reshuffle by spending $s_2 = s_1^* = (\gamma_1/2) - \omega$, his utility equals:

$$u_2\left(\frac{\gamma_1}{2} - \omega; \bullet\right) = -\left(\frac{\gamma_1 - 2\omega}{4}\right)^2 - \left(\frac{\gamma_1 + 2\omega}{4}\right)^2 - \left(\frac{\gamma_1}{2} - \omega\right)^2 - \left(\frac{\gamma_1}{2}\right)^2 + \gamma_2\left(\frac{\gamma_1}{2} - \omega + \frac{\gamma_1}{2}\right). \tag{26}$$

M_2 prefers s_2^* to s_2 if $u_2(\omega; \bullet) > u_2(\gamma_1/2 - \omega; \bullet)$, which simplifies to:

$$\gamma_1^2 + 10\gamma_2\omega - 3\gamma_1\gamma_2 - 4\gamma_1\omega > 0. \tag{27}$$

By condition (i), $10\omega > 3\gamma_1$, so solving for γ_2 yields:

$$\gamma_2 > \frac{4\omega\gamma_1 - \gamma_1^2}{10\omega - 3\gamma_1}. \tag{28}$$

This inequality represents the bounds on M_2 's willingness to deviate from s_2^* . The inequality holds by condition (ii) so s_2^* is M_2 's optimal choice. ■