The Impact of Individual and Collective Performance on Ministerial Tenure

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Abstract. Government ministers in Parliamentary democracies are career politicians for whom public service is an important source of motivation. The length of their tenure is controlled by a Prime Minister, and is based among other things on their performance. We study the effects of individual and collective ministerial performance on the length of time a minister serves in British government from 1945-97, using the number of resignation calls for a minister as an individual performance indicator and the cumulative number of such calls as an indicator of government performance. A minister’s hazard rate is decreasing in the cumulative number of resignation calls; but conditional on receiving a first resignation call, the hazard rate increases with the number of calls that all government ministers have faced in the past. Our results are consistent with the theory of relative performance evaluation, and with the doctrine of collective ministerial responsibility.

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1. INTRODUCTION

In a parliamentary system, attaining ministerial status represents the peak of a political career. Whatever motivates entry to parliament- whether a desire for office perks, policy influence or social standing- achieving these goals means attaining ministerial status and maintaining it. Few ministers leave office voluntarily; when their stated reason for exit is a desire to spend more time with their family, few political commentators give such views much credence. Moreover, government ministers are rarely deselected by their constituents. Exit from ministerial life comes either when the government the minister serves is defeated (either by vote of confidence in the parliament, or election of the opposition), or when a minister is fired due to perceived negligence or incompetence on his part. Adopting Diermeier, Keane, and Merlo (2005)’s parlance, government ministers in parliamentary democracies are “career politicians”: they desire government service, and once appointed wish to remain in office as long as possible.

Serving their country and party are important sources of (intrinsic) motivation for a minister. However, this does not preclude the existence of an incentive problem between the Prime Minister and her ministers as their objectives (or payoff functions) are not necessarily aligned.1 In this context, the threat of dismissal gives the Prime Minister a powerful incentive device as she decides how long a minister will serve under her. We explore to what extent a minister’s tenure is affected by the arrival of information about his performance and that of the government he serves. We ask whether the relations we observe are consistent with the theory of incentives and also investigate the existence of implicit conventions such as collective responsibility, which political scientists and legal scholars have long-claimed lie at the heart of parliamentary governance.

Using data on the tenure of all ministers who have served in British government from 1945-97 we estimate Proportional Hazard models that condition on individual attributes and government fixed effects. Our individual performance indicator is the number of resignation calls a minister faces during his time in office, as reported in the press. If someone in Parliament, media, or some non-political organization, suggests the minister should resign, then it is defined as a “resignation call”. The issue at stake might be directly related

1Following standard use in principal-agent modeling we use the female pronoun for the principal (in this paper, the Prime Minister) and male pronoun for agents (in this paper, the minister).
to aspects of a minister’s task or to that of his department, or related to personal aspects of his behavior such as personal or financial misdemeanors. Our aggregate performance measure is the cumulative number of such calls by government.

We show that the hazard rate of a minister increases when he faces a resignation call with a steep increase in the probability of leaving government after a first call. Perhaps more surprising is that the hazard of any given minister is affected not only by his own performance, but also by that of his colleagues. Our main finding is that the hazard rate of a government minister decreases whenever the cumulative number of resignation calls increases. This result is consistent with the use of relative performance evaluation by the Prime Minister, and is robust to a variety of different specifications of our model that control for observed and unobserved ministerial traits and features of the governments they serve. When we allow for an interaction between our individual and government performance measure we find that the likelihood of leaving government upon receiving a first call for resignation increases with the cumulative number of resignation calls for the government. We suggest this is consistent with a theory of collective responsibility: a minister bears responsibility for the performance of his colleagues; the expected tenure of a minister who faces a resignation call decreases with the number of colleagues who have faced similar calls.

We provide a brief overview of the related literature in Section 2. In Section 3, we explain the role ministers in Great Britain. In Section 4, we discuss the relation we expect between performance and tenure. In Section 5, we introduce the data and provide some descriptive statistics. In section 6, we describe our empirical specification. Section 7 presents our results and Section 8 then concludes.

2. Related Literature

Our study is related to an expanding literature that focuses on political careers and that asks which mechanisms can be used to provide incentives for politicians. The key question addressed in this literature thus far is whether higher salaries enhances the performance of a political regime, and the effect of politicians’ salaries on turnover (i.e. the retention or deselection of incumbents). Much of this literature finds that higher salaries enhances the performance of political elites and reduces turnover. More specifically, higher
wages can induce politicians to behave in voter’s interests (Besley, 2004); attract higher calibre politicians so that the quality of the political class is enhanced (Caselli and Morelli, 2004; Messner and Polborn, 2004); though may weaken the effect of elections as a mechanism for weeding out incongruent types (Besley, 2006).

Diermeier, Keane, and Merlo (2005) establish how political service affects post Congressional salaries in the private sector. Mattozi and Merlo (2008) explore a model where private sector and public sector skills are correlated, though public actions are more observable. Pursuing a political career allows citizens to signal their quality to prospective employers. They find that higher salaries reduces the quality of the class of political representatives, though, consistent with the earlier literature cited above, higher salaries reduces turnover.

We also look at how the reward structure for the political elite is related to their performance. Closely related to our study is that by Di Tella and Fisman (2004) who, inspired by the literature on the reward structure of CEO’s, look at the relationship between a governor’s wage and his performance (measured as state income per capita or taxes per capita) using US data. We analyze the effect of both individual and comparative performance measures on a politicians reward. This relates our work to that of Besley and Case (1995) who look at the re-election of US governors conditional on changes in state taxes, and changes in taxes set by incumbents in neighboring states.

We contrast with that and other studies cited above in our focus on the length of tenure as a direct element in the minister’s reward structure. As Besley (2004) points out, one of the main reasons we might expect higher salaries to lead to better performance is an efficiency wages argument: higher salaries increase the value of a political career, thus inducing politicians to take actions that maximize their prospects of retaining their positions. The observable implication is that higher salaries should lead to lower turnover of ministers. Critically however, the chief of the executive does not control the salaries of her agents, and cannot make pay dependent on performance. She does, however, control the nature of their task, (through appointments to different ministries), and the length of a ministers tenure (through her power to fire ministers). Here our focus is on the latter effect.

We find a similar focus in a growing political science literature that investigates the causes and effects of ministerial turnover: Indridason and Kam (2008) have shown that cabinet
reshuffles can be used to bring departmental spending under control; Dewan and Dowding (2005) showed that a Prime Minister has an incentive to respond to political scandals by firing the minister involved in that resignations correct for the negative effect of scandals on government popularity; and Dewan and Myatt (2007) showed that the prime minister can adopt a firing rule that provides incentives for ministers to implement desirable policy innovations. Huber and Martinez-Gallardo (2004) look at turnover in light of a Prime Minister’s search for talented ministers, and Dewan and Myatt (2008) explore the determinants of the Prime Ministers firing rule when she has a limited supply of talented ministers available.

Here our performance measure is the length of a ministers tenure. This has been previously studied by Berlinski, Dewan, and Dowding (2007) who show that individual characteristics such as ministerial experience, educational background, and gender, are strong predictors of the length of ministerial tenure even when controlling for various aspects of the governments in which ministers served. Their approach does not identify how the arrival of information about the performance of the minister and the government he serves affect the length of tenure. Therefore, it gives us no insight into how the Prime Minister uses measures of ministerial performance to provide incentives to their ministers.

3. BACKGROUND: THE ROLE OF MINISTERS IN BRITAIN

In the British system, government departments are lead by ministers who are responsible for developing and implementing policy, though policy decisions are taken by a cabinet under the auspices of the Prime Minister.

Large departments are headed by full cabinet ministers (the most prestigious position in government), and also have lower ranked ministers (we define as ‘ministers of cabinet rank’) with specific responsibilities. Some smaller departments are also headed by ministers of cabinet rank.\(^2\) The third rank is ‘junior minister’. Also subject to government discipline are whips whose main role is to ensure MPs vote in line with the government and signal backbench discontent to the cabinet. The Chief Whip is on the government

\(^2\)We define them as ‘ministers of cabinet rank’ since they can make presentations to the full cabinet in areas of their responsibility. Most of them are officially called ‘Ministers of State’ though some full cabinet ministers also have that title.
payroll and nowadays tends to be a member of the cabinet. Parliamentary Private Secretaries (PPSs) are also officially appointed by the Prime Minister but as their role is to provide a line to parliament for full cabinet ministers, it is normal for ministers to choose their own PPSs. The size of the full cabinet has not varied much since the Second World War, ranging from 18 to 23, though the government payroll has increased from 81 in 1950 to 111 in 2005 (Berlinski, Dewan, Dowding, and Subrahmanyam, 2008). Although most ministers are drawn from the House of Commons (that is, they are elected by popular vote), Ministers of State and junior ministers are sometimes drawn from the Lords in order give that House a spokesperson for every departmental brief.

Under the British Constitution ministers hold their position at the pleasure of the Crown and are appointed on the recommendation of the Prime Minister (Jennings, 1959). There are no rules governing whom a Prime Minister can choose as a minister, though as they are accountable to parliament they should be drawn from one of its two houses. There is no formal investiture of ministers or government and no confidence vote in new ministers or government. Governments can face a motion of no confidence tabled by the opposition, or a Prime Minister can let it be known that a vote on a given bill is a vote of confidence. But conditional on the survival of the government, the length of time a minister serves is then determined by the Prime Minister who may fire and bring in new faces as political and other circumstances allow.

In making these decisions a Prime Minister is primarily concerned with the re-election of her government. A government where ministers perform well is more likely to be re-elected and so good ministerial performance provides an incentive for the Prime Minister to retain the minister. Thus one might view the length of time served as reward for ministerial performance. Whilst this implicit contract cannot be enforced in the courts, evidence of its existence may be found in the data; put simply, those ministers who perform more ably should survive longer than those whose performance is below par.

4. Performance and Tenure

Following Strøm (2000) one might think of the relationship between a Prime Minister and her ministers as one between principal and agent in which the Prime Minister provides

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1However, it is also known that to lose a vote on some aspects of legislation, such as a budget would, in practical terms, be equivalent to a vote of no confidence.
incentives for better performance by her ministers through ministerial turnover. As he argues, although “parliamentary regimes may be better equipped to deal with problems of adverse selection.....the weaker capacity for ex post monitoring leaves parliamentarism more exposed to moral hazard” (Strøm 2000, p. 278). If the objectives of the Prime Minister and her ministers are not completely aligned, then an incentive problem arises as the Prime Minister does not directly observe the effort of her ministers which determines the outcome of a ministerial task. Instead, she observes a variety of performance measures such as, for example, the success or failure of the minister’s policy initiatives and media evaluations of his performance.

4.1. Incentives, Performances and Ministerial Turnover. The theory of incentives says that the principal should reward or punish an agent using any performance measure that (conditional on the other measures of performance used) has a positive informational content (Gibbons, 2005; Baker, Gibbons, and Murphy, 1994; Holmström and Milgrom, 1979; Holmström, 1982, 1979). The weight they should receive in the reward scheme will depend on the responsiveness of these measures to effort and quality of the agent, the degree of alignment of these measures with the objectives of the principal, and the level of risk they involve. Ceteris paribus, the more responsive, the higher the degree of alignment, and the lower the risk involved, the more weight the reward scheme should place on those measures.

Straightforwardly we can think of a contract which specifies tenure as a function of a set of observed indicators. For example, we might believe that a resignation call is more likely to occur when the performance of a minister falls below some threshold. It signals that perhaps the minister concerned was distracted by issues other than performing at his government task. As such a resignation call serves as a discrete indicator of ministerial performance and intuitively we would expect the relationship between it and observed tenure to be negative; a call for a minister to resign leads to shorter tenure, since a Prime Minister will sometimes accede to that call.

Of course, no performance measure is perfect. A resignation call is a noisy signal of the minister’s performance, compounding features for which he is rightly responsible in his capacity as minister with subsidiary factors, or random shocks, beyond his control. To illustrate consider, for example, the issue of homeland security which in the British
system of government is the responsibility of the Home Secretary. Suppose that a terrorist attack takes place on a particular day. The fact that the attack is successful may reveal vulnerabilities in preparation, flaws in information processing, and in communication between departments, all of which are related to ministerial performance. But of course, whether a terrorist attack succeeds might be due to factors that are not under the control of the minister such as the vigilance of the public. Furthermore, it is not always clear how accountable is the minister responsible at the time a problem emerges: the blame may be better directed at the previous incumbent.

Since a resignation call is a noisy signal of the minister’s performance, the Prime Minister will likely include additional measures in her reward scheme. Random shocks which might affect the performance of a minister are likely to be correlated across government departments: an economic downturn caused by a change in oil prices can lead to a tightening of the budget and to pressures on service delivery across departments; a health scare, such as a virulent new flu strain, could affect health services, transport and education, amongst other things. Whereas different ministers are responsible for these areas, their performance is conditional on a common shock and the evaluation of that performance should reflect this common cause. Thus, one measure which might be used in addition to an individual performance measure is the performance of other ministers: if a minister is seen to fail at a time when others falter also, his performance may not be judged so harshly; conversely, if a minister is seen to succeed when others around him flounder, then his performance will be judged more positively. Indeed, to the extent that the performance of others can help eliminate noise in any individual measure of performance, it may be a good idea to include them in the reward structure of an agent.

In theory these shocks may be observed by a Prime Minister when deciding whether to fire or to retain a particular minister. In practice, and in order to test this theory, we would require measures for every possible common shock and this is not feasible. Nevertheless we can use a single measure which encompasses many of these common causes. As our measure we use the cumulative number of resignation calls over a government’s life span. We think that our cumulative, rather than an instantaneous measure, of collective performance might be a natural way for a Prime Minister to aggregate the relevant information.
For example, whereas the performance of health and emergency services could be immediately assessed in light of a flu outbreak, the effects on educational performance (such as test scores) would be felt some time thereafter.

4.2. The Doctrine of Collective Ministerial Responsibility. There are other factors that might influence the ways in which resignation calls affect ministerial tenure. Political scientists and legal scholars have long studied the existence of an implicit convention of “collective responsibility” that impacts on ministerial turnover. This doctrine has its origins in the 18th century through the practice of collusion between ministers in the advice they gave to the sovereign (Gay and Powell, 2004). Such collusive practices acted as a check on the sovereign, allowing the Prime Minister and the cabinet to develop and pursue specific policy agendas. Moreover, it also provided protection for individual ministers, limiting the monarch’s ability to single out individual ministers for blame. By the 19th century Dicey, the renowned legal scholar, had identified a convention of collective ministerial responsibility which involved unanimity in the advice given to the crown (Turpin, 1993). It developed further under Lord Salisbury who set out the formulation of joint or collective responsibility in a speech to parliament.

For all that passes in Cabinet every member of it who does not resign is absolutely and irretrievably responsible and has no right afterwards to say that he agreed in one case to a compromise, while in another he was persuaded by his colleagues ... It is only on the principle that absolute responsibility is undertaken by every member of the Cabinet, who, after a decision is arrived at, remains a member of it, that the joint responsibility of Ministers to Parliament can be upheld and one of the most essential principles of Parliamentary responsibility established. (Hansard, Vol. 239, cols. 833-4.)

The doctrine of collective responsibility states that ministers share the blame when a policy goes wrong. Although this convention is most closely related to parliamentary democracies that fit the “Westminster model”, it is observed in some shape or form in all parliamentary democracies. As Gallagher, Laver, and Mair (2006), p41. argue
"On balance and with a few notable exceptions, the constitutional principle of collective cabinet responsibility is diligently observed as a matter of political practice. This is because collective cabinet responsibility and confidentiality are usually in the interest of all ministers—despite short-term incentives individual ministers might on occasion have to defect from them. Cabinets often have to take politically unpopular decisions, and there is comfort for ministers in the knowledge they can shelter from the fallout of these decisions under the cloak of collective responsibility."

The existence of the doctrine of collective responsibility might undermine the effects of an incentive scheme based on ministerial performance. The effect of performance-based evaluation is mitigated when (i) ministers are protected from wrongdoing under the shield of collective responsibility and (ii) ministers are exposed to the risk of losing their jobs due to the failures of others.

In practice, the extent of a minister’s protection and exposure are limited. As Caselli and Morelli (2004) argue, some of the rewards of a political career are due to association and so the esteem accorded an office holder is directly related to the performance of those around him. Therefore, if an increase in the number of cumulative resignation calls is associated with a decline in the government’s reputation, a Prime Minister should be less willing to support a threatened minister. Correspondingly, upon receiving a resignation call, ministerial tenure should be decreasing in the number of calls made to ministers of the same government. Indeed, the interaction between these terms is a measure of the minister’s exposure to collective responsibility.

5. DATA AND DESCRIPTIVE STATISTICS

To assess the empirical relevance of our arguments we analyze data on all British ministers from 1945-97. In all, our analysis spans nineteen terms from the first Attlee administration until the end of John Major’s second term. Each minister is coded according to rank, the government and the Prime Minister under which he serves. Virtually all ministers that appear in Butler and Butler (2000) are included in our sample. The very few ministers that were excluded lack information on age or there were inconsistencies in Butler and Butler (2000) that we were not able to rectify from other sources.
also coded for date of birth, education, gender, and whether or not the minister is ennobled. Table 1 provides the definitions of each of the variables used in the analysis and provides basic descriptive statistics for the whole sample.

We analyze the length of time that elapses from when a minister enters government until he leaves or the government terminates. A minister leaves the government following an individual resignation or following a reshuffle. We treat the end of a government term as occurring either when there is an election, or when there is a change of Prime Minister. We treat the starting day for each minister as occurring two weeks from the day the government is formed thus allowing for a period during which the Prime Minister might shuffle cabinet. Similarly, we censor all ministers two weeks before the end of government to avoid problems generated by coding errors at the end of governments. For simplicity we refer to ministerial spells as ministers from now on.

As a performance measure we use a call which is made for a minister’s resignation. This data has been collected from *The Times Newspaper* which provides the most systematic data over the time period with an online coverage that starts in 1785. For later years, where coverage is available, other newspapers were consulted online via Lexis. We found that all calls by serious commentators or editorials in major newspapers had also been reported in *The Times*. As the language of Parliament and the press has not remained constant over the period we coded not only those cases where an explicit call for a resignation was made, but also those where the minister was “severely criticized”, described as “being in difficulty” or asked to “consider his position”. All of these cases are referred to as “resignation calls”. A resignation call is recorded on the date the issue first come to light. If a minister is asked to resign repeatedly over the same issue and without new information coming to light we record only one resignation call for this issue. Fuller details are provided in the *Appendix*.

As we can see from Table 2 there are 158 ministers for whom a resignation call is made. Of these, 105 receive only one such call, 43 receive two, and only 10 receive 3 or more. Ministers with more than one resignation call in our data are ministers whose second call is related to: (i) an issue different to that raised in their first resignation call; or (ii) new
damaging information that is revealed about the first call, thus leading to a renewal of
the initial call for resignation. In total there are 225 resignation calls in the data. The
ministerial spells we observe are evenly split between the periods 1945-1970 and 1970-
1997. In the latter period there are a larger number of resignation calls with a more or less
proportional increase in the number of ministers receiving one, two or more such calls.
Thus we observe that resignation calls have grown over time and this may be due to
governments facing ever closer scrutiny from the media. It is worth noting that of the 225
resignation calls we record, only a minority are related to either personal (16) or financial
(12) misdemeanors.

As an aggregate measure of government performance we use a cumulative index of res-
ignation calls over the period the government is in office. Table 3 shows the total number
of resignation calls during the course of, and by the duration of, each government. Figure
1 plots the cumulative number of resignation issues by government. The peaks on this
graph represent the termination of each government in our sample. The height of the
peaks of this graph provide a rough indication of the reputation of each government. The
highest peaks (lowest reputation) are recorded during the Wilson period of the 1960s, the
Thatcher administrations in the 1980s, with Major’s administration breaking all previous
records in the 1990s. In fact, the number of resignation calls increases over time from 49 in
from the Heath 1970-74 government).

In Table 4, we show estimates of Poisson regressions of the number of scandals that a
minister received in a given government on individual and government characteristics.
In column (1), we control for individual attributes fixed at the moment the minister en-
ters the government such as educational background, age, gender, a dummy for having
served under previous governments, a dummy for having had resignation calls in a pre-
vious governments, a dummy for being a noble and three dummies for government rank
(we omitted the dummy for highest ministerial rank). In column (2), we add government
attributes such as the size of the government majority, dummies for a second and third
term and a dummy for the Labour party. In column (3) we include prime minister fixed
effects and in column (4) government fixed effects (i.e., the interaction between prime
Finally, in column (5), we use the fact that ministers served in different governments to condition on individual fixed effects. All in all, individual attributes such as age, gender, and educational background cannot explain much of the variation in the number of scandals. In fact, only being a noble and ministerial rank are statistically significant across specifications. Ministers further up the ministerial ladder are subjected to more calls for their resignation. Also, in some specifications, having received a resignation call in a previous spell increases the expected number of resignation calls in a current ministerial spell.

Our aim in this paper is to improve our understanding of ministerial tenure by focusing on individual ministerial performance, the collective performance of the government and upon the interaction between the two. We initially explore these effects in Figures 2-5 where we plot the ministerial survivor functions for our sample of ministers. The survivor function denotes the probability that the time to an event is greater than some time interval of length $T$. Equivalently, the survivor function shows the proportion of the sample surviving beyond some specified time-point, in the sense that, for that proportion of the sample, the event has not occurred at $T$. For convenience, we plot the survivor functions for ministers with time recorded as months.

Figure 2 explores the effect of our performance measure on ministerial tenure. It provides a graphical representation of the survival probability of a minister during his first five years in office, breaking down the sample according to those ministers who have not faced a resignation call ($r_i = 0$) and those who have faced at least one such call ($r_i = 1$). As one would expect, the survivor function falls more sharply for ministers experiencing one or more resignation calls. In governments which see out their term of office, 70 percent of ministers who have not been involved in a resignation call survive; in contrast only 30 percent of ministers who have faced one or more resignation calls see out their term.

Figure 3 explores the impact of the government’s performance, illustrating the survivor function evaluated at different levels of our cumulative resignations index. In particular, we look at the survivor function of ministers in governments where this cumulative index is less than 8 and more than 8, with 8 being the median number of resignation calls. Ministers serving in governments that experience more cumulative calls than the median trend to survive longer, although the difference seems small.
Figure 4 looks at the interaction effect between government performance and that of the individual minister, illustrating the survivor function for ministers who have not faced a resignation call and those who have faced at least one such call, evaluated for the case where the cumulative index of resignation issues is less than 8 (in panel 4a) and more than 8 (in panel 4b). In observing these graphs, two effects are immediately apparent. Firstly, the difference in the survival probabilities between those who have faced a resignation call and those who have not, is strikingly larger when the cumulative number of resignation calls is greater than 8. Evaluated at the 40 month period, roughly 40 percent of ministers who have faced a resignation call survive beyond that time-point when the cumulative number of resignation calls is greater than the median. This compares with a figure closer to 25 percent when the the cumulative number of resignation issues is less than the median. These figures thus illustrate the interaction effects of a government’s reputation on expected tenure. The message is clear, conditional on receiving a resignation call a minister’s survival depends on how many such calls have been previously made to members of his government.

A key message illustrated in these graphs is that a minister’s probability of survival depends not only on his own performance but also on that of his colleagues. Of course, if we are to identify the effects of our performance indicators, we must also take account into account the characteristics of different ministers in our sample and of the governments they serve in. Our empirical strategy, to which we now turn, helps disentangle these effects from those of our performance indicators.

6. **Empirical Strategy**

The objective of this paper is to estimate how the arrival of resignation calls to a minister and his colleagues affects the length of his tenure. We assume that the Prime Minister reacts to these revelations because they provide information about the performance of the minister and therefore about his effort and commitment to the job.

To test our key hypotheses, we estimate Cox Proportional Hazard models. For reasons well discussed in the political science literature, Ordinary Least Squares estimates of time to an event are problematic (Box-Steffensmeier and Jones, 1997); this is due to issues of
data censoring, and, perhaps more importantly, due to the likely violation of the assumption of normally distributed error terms in such analysis. Here we focus our attention instead on estimations of the hazard rate of ministerial spells at any given point in time \( t \), conditional upon the spell being of a duration at least equal to \( t \). The hazard rate is the ratio of the failure rate – that is the instantaneous probability that a minister will resign – to the survival function.

We define \( t_{ig} \) as the spell of minister \( i \) in government \( g \) where an individual starts a new ministerial spell every time he enters government independently of having had spells in previous governments. Therefore, expressed in the proportional hazards format, our hypothesis leads to the following initial specification:

\[
 h_{igt} = \lambda(t_{ig}) \times \exp \left[ r_{igt} \psi' + \beta cr_{gt} + (r_{igt} \times cr_{gt}) \phi' \right],
\]

where \( \lambda(t_{ig}) \) is the minister’s baseline hazard at \( t_{ig} \). The first bracketed term on the right-hand side, \( r_{igt} \) is a vector of ministerial performance measures; specifically we code two dummy variables corresponding to a first and second or higher resignation call respectively. The second term \( cr_{gt} \) is our measure for government performance; specifically the cumulative number of resignation issues at any given point in time. The third term is an interaction between our vector of individual performance indicators and our government performance measure.

We expect \( \psi \) to be positive; a resignation call makes it more likely that a minister resigns. Conditional on this event we expect \( \beta \) to be negative if relative performance evaluation is important. Our discussion above about the effects of collective responsibility suggests that the interaction between these two terms, estimated by the coefficients \( \phi' \) should be positive – as more ministers are protected under collective responsibility the hazard rate for a minister, upon receiving a resignation call, is higher.

Of course, resignation calls may be correlated with initial traits that characterize the government rather than with the arrival of new information. For example, a government that has been elected by a large margin may face a weak opposition and therefore the actions of its ministers are less likely to be called into question. If, independent of any resignation calls, ministers elected by a large majority are likely to serve longer, any estimate of the effect of individual and collective calls for resignation that does not account for this effect
will be biased and inconsistent. In practice, these issues can be resolved by including
government traits such as term served and size of government majority. We can be more
thorough, by including a set of government fixed effects.

It will also be the case that individual factors are correlated with the scandal arrival rate
and with the durability of ministers. For example, cabinet ministers (i.e., those that carry
more responsibility) are more likely to be exposed to resignation calls due to the nature
of their jobs. However, those assigned to such posts may prove to be more durable be-
cause of the higher quality required to perform these tasks: a negative correlation arises
between the innate quality of a minister and the rate at which scandals arrive. This prob-
lem can be solved by conditioning on the post a minister is assigned to at the beginning
of his spell in government. In fact, we can condition on an array of observable ministerial
characteristics: educational background, gender and ministerial experience (including a
measure of whether the minister had resignation calls in previous governments).

We account for the fact that ministers’ and government performance could be correlated
with systematic features of the government by including a full set of government char-
acteristics. We start with a restrictive set of controls such as size of government majority,
party and government term, and go further by including government fixed effects (i.e.,
a full set of interactions between Prime Minister and government term). The models we
estimate are variations of the following proportional hazards model,

\[ h_{igt} = h_0(t) \times \exp \left[ r_{igt} \psi' + \beta c_{rgt} + (r_{igt} \times c_{rgt}) \phi' + X_{ig} \theta' + B_g \pi' \right], \]

where \( X_{ig} \) is a vector of individual ministerial characteristics and \( B \) are a set of govern-
ment characteristics.

Not all elements in the portfolio of skills that a minister brings into government, and
that are observable to the Prime Minister, are readily observable to the political analyst.
One such example is the capability of taking the most appropriate decision when given
a menu of options. Although such skills may prove invaluable to the Prime Minister,
their impact hampers our ability to identify the effect of our variables of interest. The
argument is simple: suppose that a skillful minister is better equipped to foresee the likely
arrival of resignation calls; if, foreseeing a bumpy road ahead, such ministers choose to
leave government with their ministerial badge intact, then the arrival rate of scandals is correlated with a low quality group of ministers with inherently lower durability.\textsuperscript{6} This effect can create a spurious correlation between the arrival of information and the tenure of ministers. In order to tackle this issue we also factor out fixed unobservable ministerial characteristics by stratifying our estimates by individual.\textsuperscript{7}

The Cox proportional hazards model makes no restrictions on the shape of the underlying baseline hazard. However, it does not allow the effect of our performance indicators to be affected by the length of time the government has been in existence. This assumption appears strong, as one might expect the Prime Minister to react differently to resignation calls which occur at the beginning of the mandated government term. To look at this issue we study how our conclusions change by looking at two sub-samples: one includes the first 18 months in government only; and the other includes the first 36 months in government.

Finally we account for the fact that media exposure of ministers may vary systematically during our period of analysis. This may be reflected in the Prime Minister’s response to resignation calls. To deal with this we split our data set and compare the estimates across different time periods. Specifically we look at the period 1945-1970 and the period 1970-1997, the latter period being one in which we observe a larger number of resignation calls reported by the media.

7. HAZARD RATE ESTIMATES

In Table 5, we present estimates of the hazard rate of ministers, conditional on both individual performance and characteristics as well as the performance and characteristics of the government in which they serve. The first column presents results for a model that includes only our performance measures and shows that the hazard rate for a minister facing his first resignation call is roughly twice that that of a minister who has not yet faced such a call. A minister facing a second resignation call has a significantly higher hazard rate still, to roughly 7 times that of a minister with no previous calls to his name.

\textsuperscript{6}For example, younger ministers might calculate that it is optimal to quit a government with unpopular policies, as this may enhance their chances of achieving high office in a later government, particularly if the issue they choose is unpopular with their party. Harold Wilson resigned over policy as a junior minister under Attlee, only to return as leader of his party and gaining the premiership thirteen years late.

\textsuperscript{7}We estimate the model with stratification by individual using the STATA command strata.
A unit increase in the cumulative number of resignation calls reduces the hazard rate by roughly 3 percent.

In column 2, we add controls for ministerial traits such as gender, educational background, age and nobility as well as for ministerial attributes which relate to a minister’s service in previous governments. Specifically we control for whether a current minister has past experience of government and whether during that time he received a resignation call. We also control for a minister’s position in the government rank. In this model we also include controls for fixed attributes of the government a minister serves: the size of the government majority; which party is in power; and government term. Estimates for this model reveal that the hazard rate for a minister facing his first resignation call is 2.5 times higher than that of a minister who has not yet faced such a call; a minister facing a second resignation call has a hazard rate 8.5 times that of a minister with no previous calls to his name. In this model, a unit increase in the cumulative number of resignation calls reduces the hazard rate by roughly 7 percent.

In the remaining models estimated in Table 5 we vary the controls for fixed attributes of the government in which a minister serves. Column 3 adds to column 2 fixed effects for the Prime Minister under which the minister serves. Finally column 4 includes government fixed effects (i.e., a full set of interactions between Prime Minister and government term). In all, these variables have almost no effect on the estimates of our individual performance measures on tenure, though the reduction in the hazard rate due to a one unit increase in our collective performance measure is slightly larger.

We turn briefly to analysis of the individual background variables. Comparing our results, which are conditioned on performance indicators, to those in Berlinski, Dewan, and Dowding (2007) we find strong similarities. To give a few: those with Oxbridge (i.e., those that have attended Oxford or Cambridge University) backgrounds and those with higher ministerial rank are more durable; here we also find that previous experience in government increases the hazard rate of a minister but the relationship is not statistically significant.

The estimates in Table 5 do not take into account how the collective performance of the government interacts with that of the individual minister. In Table 6, which has a similar

---

8 This is a time varying covariate for those ministers that change jobs
structure than Table 5, we estimate a model which includes an interaction term between individual and collective performance measure. We observe that the likelihood of leaving government upon receiving a resignation call is increasing in the cumulative number of calls. In particular, that upon receiving a first resignation call, a minister’s hazard rate increases by 6 percent for each previous call made to any minister in the government he serves. We find no evidence of a similar interaction effect when considering second or higher resignation calls. After including the interaction term, we find no direct effect of a first resignation call. As in the previous table, the hazard rate of a minister increases steeply with a second resignation call and a unit increase in the cumulative number of resignation calls reduces the hazard of a minister without individual calls for resignation.

Taken together, our estimates are consistent with predictions based on the theory of performance evaluation when applied to ministerial tenure. The largest direct effect upon a minister’s hazard rate is due to his own performance, particularly if he receives a second call. Consistent with relative performance evaluation, an increase in the cumulative resignations index reduces a minister’s hazard rate. Collective responsibility does appear to be important however in that, upon receiving a first resignation call a minister’s hazard is higher when other ministers of the same government have faced similar calls; thus, a minister bears some of the brunt of his colleagues failures. Whilst political scientists and legal scholars have long analyzed the convention of collective responsibility, to our knowledge these are the first measurable estimates of its effect.

Our results thus far show that, when controlling for observable traits of ministers and the governments they serve, there are clear and discernable effects of our individual and collective performance measures on ministerial hazard rates. In Table 7 we estimate the same models, stratifying by individual to control for any unobservable individual traits. We find that, although effects of our individual performance measure are very imprecisely estimated, the effect of our collective performance measure is robust; indeed it is much stronger than our earlier estimates would suggest. Thus whilst we cannot be certain that individual resignation calls have an effect on ministerial tenure independent of the traits of the ministers who serve, our data strongly suggests that ministers are subject to performance evaluation relative to their peers.

Of course, we exclude from columns (2)-(4) ministerial controls that are not time varying (i.e., gender and educational background).
In the first two columns of Table 8 we explore whether the impact of resignation calls differs if they occur during the first 18 months of government or during the first 36 months of government. In Table 8, for brevity, we only present models with the full set of controls as in column (4) of Table 6. In column 1, we look at the first 18 months only and in column 2 at the first 36 months. The effect of a second resignation call has a larger effect when both calls occur within the first 18 months of government. In both cases the direct effect of government performance decreases the hazard, but the magnitude of this effect appears to be stronger in the first 18 months of government. Finally, the interaction between government and individual performance shows also an increasing effect particularly after a first call for resignation. This effect appears significantly larger during the first 18 months in government. One interpretation of these results is that earlier into a government term a prime minister puts more weight on collective performance measures.

In columns 3 and 4 of Table 8 we look at whether the effect of resignation calls differ over time: column 3 of this table estimates the model for the period 1945 to 1970 (including the Wilson 1966-1970 government); column 4 estimates the model for the subsequent period. Results tend to be qualitatively similar with the exception that ministers facing more than one resignation call appear to have a higher hazard rate in the latter period. Thus, on this evidence it would appear that higher exposure to the media has not changed drastically the way the Prime Minister reacts to resignation calls.

8. Conclusions

We provide analysis of the effects of individual and collective ministerial performance on the length of time a minister serves in British government for the period 1945-97, using the number of resignation calls for a minister as an individual performance indicator and the cumulative number of such calls as an indicator of government performance. We asked whether the relations we observe in these data are consistent with the theory of incentives and with the existence of implicit conventions such as collective responsibility. Our analysis shows the data to be consistent with the theory of incentives. A resignation call increases the likelihood that a minister returns to the back-benches, but as the number of colleagues who have faced similar calls rises his hazard diminishes. A minister’s tenure thus reflects not only his own performance but is also directly responsive to that
of his colleagues. Indeed our results indicate support for the hypothesis that a minister's performance is evaluated relative to that of his fellow ministers. Whilst the paper adds to previous empirical analysis of how the Prime Minister manages her cabinet (Indridason and Kam, 2008, 2005; Dewan and Dowding, 2005; Huber and Martinez-Gallardo, 2004), it presents the first real evidence of relative performance effects upon ministerial tenure.

Established conventions such as collective responsibility may weaken the relationship between the performance of a minister and his tenure. We show that, when a minister faces a resignation call, his hazard rate is increasing in the number of resignation calls cumulated over the lifespan of the government. Thus ministers share collective responsibility in a real sense: their expected tenure upon receiving a resignation call is shorter as they are more exposed to losing their jobs due to the failures of their colleagues.

Our analysis lends support to a “two-strike rule” operating in British government: ministers facing a second call for their resignation have a significantly higher hazard than those facing their first, irrespective of the performance of the government. Our results are thus of relevance to previous formal analysis of ministerial turnover. For example, Dewan and Myatt (2007) have developed a model based on an (assumed) “two strikes rule” whereby a minister is always fired when faced with a second resignation call. Our empirical results, provide strong empirical evidence for the existence of such a rule and thus justification for its use as a modeling assumption.

Government ministers in Parliamentary democracies are career politicians: they desire government service, and once appointed wish to remain in office as long as possible. Serving their country and party are important sources of (intrinsic) motivation for them. This does not preclude the misalignment of objectives between the Prime Minister and her ministers. Lacking control over monetary rewards, a Prime Minister has a variety of tools available to achieve her objectives. Here we have focused on the threat of dismissal, but future research on parliamentary governments should look at hiring, promotion, and the nature of a minister's task, as determinants in shaping a political career.
APPENDIX

The resignation data was collected using the following methods: originally (i) all ministers noted from Butler and Butler (2000) and official sources. (ii) The Times index consulted year-by-year noting all references to departments, ministers by job and ministers by name and cross-referred to events to build up a comprehensive picture of the major political events of each year. (iii) All potential resignation issues are consulted in The Times on microfilm. Since the advent of The Times online, ministers have been surfaced together with stories cross-referenced with words “resign*”, “difficulty”, “trouble”, “consider AND position”. Checks were made against the microfiche technique and The Times online for earlier years and the microfiche coding was found to be robust.

The Times provides the most systematic data over the time period, although the Daily Telegraph was used during a period of a strike at The Times. In later years other newspapers were consulted online via Lexis. Very few new non resignation cases were found and these only in editorials or opinion pieces. All calls by serious commentators or editorials in major newspapers had also been reported in The Times. There is no systematic coverage of all newspapers online over the period of our data, with several newspapers having come and gone. though rather than attempting broader coverage over all newspapers.

REFERENCES


Table 1: Definition of Variables and Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Mean (Std. Dev.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenure</td>
<td>Ministerial tenure in months by government. Failure is defined as leaving government at least two weeks before the end of government. There are no left censored variables. Right censoring occurs when someone is still in post two weeks before the end of a government term. Ministers who fail during the first two weeks of government are dropped.</td>
<td>26.89 (16.46)</td>
</tr>
<tr>
<td>Individual calls for resignation</td>
<td>Number of individual calls for resignation (See Appendix for sources).</td>
<td>0.04 (0.20)</td>
</tr>
<tr>
<td>Cumulative government resignation calls</td>
<td>Number of resignation calls accumulated by the government. Change occurs each time there is a resignation call for a government minister.</td>
<td>2.28 (4.28)</td>
</tr>
<tr>
<td>Public school</td>
<td>Dummy variable equal to one if attended public school (i.e., private education in the UK) and zero otherwise.</td>
<td>0.62 (0.50)</td>
</tr>
<tr>
<td>Oxbridge</td>
<td>Dummy variable equal to one if attended university at Oxford or Cambridge and zero otherwise.</td>
<td>0.50 (0.49)</td>
</tr>
<tr>
<td>Age</td>
<td>Age in years at the start of ministerial spell.</td>
<td>49.17 (8.78)</td>
</tr>
<tr>
<td>Female</td>
<td>Dummy variable equal to one if female and zero otherwise.</td>
<td>0.05 (0.21)</td>
</tr>
<tr>
<td>Some experience</td>
<td>Dummy variable equal to one if a minister has served under previous governments and zero otherwise.</td>
<td>0.61 (0.21)</td>
</tr>
<tr>
<td>Resignation calls in the past</td>
<td>Dummy variable equal to one if a minister had resignation calls in a previous government and zero otherwise.</td>
<td>0.06 (0.21)</td>
</tr>
<tr>
<td>Noble</td>
<td>Dummy variable equal to one if unelected peer and zero otherwise.</td>
<td>0.21 (0.21)</td>
</tr>
<tr>
<td>Cabinet Ministers</td>
<td>Dummy variable equal to one if cabinet minister and zero otherwise.</td>
<td>0.16 (0.21)</td>
</tr>
<tr>
<td>Ministers of Cabinet rank</td>
<td>Dummy variable equal to one if minister of cabinet rank and zero otherwise.</td>
<td>0.30 (0.21)</td>
</tr>
<tr>
<td>Junior Ministers</td>
<td>Dummy variable equal to one if junior minister and zero otherwise.</td>
<td>0.35 (0.21)</td>
</tr>
<tr>
<td>Whips and Members of HM Household</td>
<td>Dummy variable equal to one if whip or member of HM Household and zero otherwise.</td>
<td>0.19 (0.21)</td>
</tr>
<tr>
<td>Majority</td>
<td>Majority is defined as the percentage share of the house commanded by the governing party.</td>
<td>54.35 (4.01)</td>
</tr>
<tr>
<td>Labour</td>
<td>Dummy variable equal to one if Prime Minister belongs to the Labour party and zero otherwise.</td>
<td>0.37 (0.21)</td>
</tr>
<tr>
<td>Term</td>
<td>Term currently being served by the Prime Minister (first, second or third). When conditioning on this variable in the regression analysis 2 dummies are used.</td>
<td></td>
</tr>
<tr>
<td>Prime Minister</td>
<td>Eleven Prime Minister identifiers. When conditioning on this variable in the regression analysis 10 dummies are used.</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Data source is Butler and Butler (2000). There are 2,230 spells in total.
Table 2: Number of Resignation Calls for Ministers with Resignation Calls

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>105</td>
<td>34</td>
<td>71</td>
</tr>
<tr>
<td>Two</td>
<td>43</td>
<td>13</td>
<td>30</td>
</tr>
<tr>
<td>Three or More</td>
<td>10</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>49</td>
<td>109</td>
</tr>
</tbody>
</table>

Notes: See Table 1 for the definition of variables. The period 1945-1970 includes the Wilson 1996-1970 government and the period 1970-1997 starts with the Heath 1970-74 government. There are 1087 spells in the first period and 1143 in the second.
Table 3: Resignation Calls and Government Duration

<table>
<thead>
<tr>
<th>Government</th>
<th>Resignation Calls</th>
<th>Government Duration (in months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attlee 1945-50</td>
<td>9</td>
<td>54.82</td>
</tr>
<tr>
<td>Attlee 1950-51</td>
<td>12</td>
<td>19.97</td>
</tr>
<tr>
<td>Churchill 1951-55</td>
<td>6</td>
<td>41.21</td>
</tr>
<tr>
<td>Eden 1955</td>
<td>0</td>
<td>1.61</td>
</tr>
<tr>
<td>Eden 1955-57</td>
<td>6</td>
<td>19.48</td>
</tr>
<tr>
<td>Macmillan 1957-59</td>
<td>10</td>
<td>32.79</td>
</tr>
<tr>
<td>Macmillan 1959-63</td>
<td>19</td>
<td>48.2</td>
</tr>
<tr>
<td>Douglas-Home 1963-64</td>
<td>2</td>
<td>11.9</td>
</tr>
<tr>
<td>Wilson 1964-66</td>
<td>5</td>
<td>17.38</td>
</tr>
<tr>
<td>Wilson 1966-70</td>
<td>23</td>
<td>50.49</td>
</tr>
<tr>
<td>Heath 1970-74</td>
<td>12</td>
<td>44.36</td>
</tr>
<tr>
<td>Wilson 1974</td>
<td>3</td>
<td>7.18</td>
</tr>
<tr>
<td>Wilson 1974-76</td>
<td>15</td>
<td>17.77</td>
</tr>
<tr>
<td>Callaghan 1976-79</td>
<td>12</td>
<td>36.82</td>
</tr>
<tr>
<td>Thatcher 1979-83</td>
<td>21</td>
<td>49.05</td>
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<td>Thatcher 1983-87</td>
<td>17</td>
<td>47.93</td>
</tr>
<tr>
<td>Thatcher 1987-90</td>
<td>16</td>
<td>41.48</td>
</tr>
<tr>
<td>Major 1990-92</td>
<td>4</td>
<td>16.26</td>
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<tr>
<td>Major 1992-97</td>
<td>33</td>
<td>60.62</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>225</strong></td>
<td><strong>619.32</strong></td>
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Notes: See Table 1 for the definition of variables.
Table 4: The Impact of Individual and Government Characteristics on the Number of Individual Calls for Resignation. Poisson Models. Coefficients in Exponential Form.

<table>
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<th>Variables</th>
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<td>Public School</td>
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<td>1.217</td>
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<td>Oxbridge</td>
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<td>Age</td>
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<td>[0.334]</td>
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<tr>
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<td>0.979*</td>
<td>0.979*</td>
<td>0.978*</td>
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<td>[0.011]</td>
<td>[0.011]</td>
<td>[0.012]</td>
<td>[0.013]</td>
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<td>[0.266]</td>
<td>[0.332]</td>
<td>[0.365]</td>
<td>[0.364]</td>
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<td>Resignation calls in the past</td>
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<td>1.654*</td>
<td>0.770</td>
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<td>[0.446]</td>
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<td>[0.433]</td>
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<td>Noble</td>
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<td>0.485***</td>
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<td>Ministers of Cabinet rank</td>
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<td>0.275***</td>
<td>0.275***</td>
<td>0.231***</td>
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<td></td>
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<td>[0.068]</td>
<td>[0.067]</td>
<td>[0.067]</td>
<td>[0.052]</td>
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<td>Junior Ministers</td>
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<td>0.184***</td>
<td>0.184***</td>
<td>0.137***</td>
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<td>[0.046]</td>
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<td>0.080***</td>
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<td>[0.030]</td>
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<tr>
<td>Second Term</td>
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<td>[0.394]</td>
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<td>Third Term</td>
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<td>[0.556]</td>
<td>[0.489]</td>
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<td>Labour</td>
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<td>2,230</td>
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</table>

Notes: Standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. See Table 1 for the definition of variables. In columns (1) to (4) standard errors are robust.

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First individual call for resignation</td>
<td>1.970***</td>
<td>2.469***</td>
<td>2.459***</td>
<td>2.404***</td>
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<td>[0.296]</td>
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<td>[0.392]</td>
<td>[0.384]</td>
</tr>
<tr>
<td>Second or higher individual call for resignation</td>
<td>6.824***</td>
<td>8.568***</td>
<td>8.702***</td>
<td>8.886***</td>
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<tr>
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<td>[1.769]</td>
<td>[1.813]</td>
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<tr>
<td>Cumulative government resignation calls</td>
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<td>0.923***</td>
<td>0.909***</td>
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<td>[0.012]</td>
<td>[0.014]</td>
</tr>
<tr>
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<td>0.790**</td>
<td>0.801**</td>
<td>0.799**</td>
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<tr>
<td></td>
<td>[0.085]</td>
<td>[0.086]</td>
<td>[0.086]</td>
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<td>0.705</td>
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<td>[0.176]</td>
<td>[0.176]</td>
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<td>1.044***</td>
<td>1.044***</td>
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<td>[0.006]</td>
<td>[0.006]</td>
<td>[0.006]</td>
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<td>[0.156]</td>
<td>[0.157]</td>
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<td>0.828</td>
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<td></td>
<td>[0.164]</td>
<td>[0.165]</td>
<td>[0.168]</td>
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<td>Noble</td>
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<td>0.988</td>
<td>1.005</td>
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<td>[0.117]</td>
<td>[0.118]</td>
<td>[0.120]</td>
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<td>Ministers of Cabinet rank</td>
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<td>1.672***</td>
<td>1.661***</td>
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<td>[0.243]</td>
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<td>Junior Ministers</td>
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<td>2.245***</td>
<td>2.224***</td>
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<td>[0.358]</td>
<td>[0.355]</td>
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<td>Whips and Members of HM Household</td>
<td>3.619***</td>
<td>3.748***</td>
<td>3.695***</td>
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<td>[0.667]</td>
<td>[0.695]</td>
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<td>0.941***</td>
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<td></td>
<td>[0.013]</td>
<td>[0.018]</td>
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<tr>
<td>Second Term</td>
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<td>1.968***</td>
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<tr>
<td></td>
<td>[0.270]</td>
<td>[0.308]</td>
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<td>Third Term</td>
<td>2.228***</td>
<td>2.612***</td>
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<tr>
<td></td>
<td>[0.438]</td>
<td>[0.574]</td>
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<td>Labour</td>
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<td>[0.114]</td>
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<tr>
<td>Prime Minister fixed effects</td>
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<td>No</td>
<td>Yes</td>
<td>No</td>
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<td>Prime Minister x Term fixed effects</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Observations</td>
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<td>25,572</td>
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</tbody>
</table>

Notes: Standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. See Table 1 for the definition of variables.

<table>
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<tr>
<th>Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First individual call for resignation</td>
<td>1.089</td>
<td>1.335</td>
<td>1.369</td>
<td>1.318</td>
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<td></td>
<td>[0.292]</td>
<td>[0.368]</td>
<td>[0.378]</td>
<td>[0.365]</td>
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<td>Second or higher individual call for resignation</td>
<td>8.620***</td>
<td>8.636***</td>
<td>9.219***</td>
<td>9.810***</td>
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<td>[3.319]</td>
<td>[3.549]</td>
<td>[3.792]</td>
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<td>Cumulative government resignation calls</td>
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<td>0.925***</td>
<td>0.917***</td>
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<td>[0.009]</td>
<td>[0.011]</td>
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<td>[0.014]</td>
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<td>First individual call X Cumulative government calls</td>
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<td>1.066***</td>
<td>1.063***</td>
<td>1.064***</td>
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<td>[0.022]</td>
<td>[0.022]</td>
<td>[0.022]</td>
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<td>Second individual call X Cumulative government call</td>
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<td>1.001</td>
<td>0.997</td>
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</table>

Minister controls | No | Yes | Yes | Yes |
Government controls | No | Yes | Yes | No |
Prime Minister fixed effects | No | No | Yes | No |
Prime Minister x Term fixed effects | No | No | No | Yes |
Observations | 25,572 | 25,572 | 25,572 | 25,572 |

Notes: Standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. See Table 1 for the definition of variables.
Table 7: The Impact of Individual and Government Calls for Resignation, and their interaction, on Ministerial Tenure. Hazard Ratios from Cox Models with Stratification by Individual.

<table>
<thead>
<tr>
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<th>(1)</th>
<th>(2)</th>
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<th>(4)</th>
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<tbody>
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<td>First individual call for resignation</td>
<td>1.144</td>
<td>0.958</td>
<td>0.937</td>
<td>0.771</td>
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<td>[0.687]</td>
<td>[0.694]</td>
<td>[0.760]</td>
<td>[0.658]</td>
</tr>
<tr>
<td>Second or higher individual call for resignation</td>
<td>6.056</td>
<td>4.793</td>
<td>2.643</td>
<td>2.037</td>
</tr>
<tr>
<td></td>
<td>[10.076]</td>
<td>[8.557]</td>
<td>[4.874]</td>
<td>[3.716]</td>
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<tr>
<td>Cumulative government resignation calls</td>
<td>0.966</td>
<td>0.888***</td>
<td>0.876***</td>
<td>0.802***</td>
</tr>
<tr>
<td></td>
<td>[0.022]</td>
<td>[0.030]</td>
<td>[0.035]</td>
<td>[0.047]</td>
</tr>
<tr>
<td>First individual call X Cumulative government calls</td>
<td>1.150**</td>
<td>1.12</td>
<td>1.147</td>
<td>1.152</td>
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<tr>
<td></td>
<td>[0.081]</td>
<td>[0.089]</td>
<td>[0.107]</td>
<td>[0.113]</td>
</tr>
<tr>
<td>Second individual call X Cumulative government call</td>
<td>1.182</td>
<td>1.231</td>
<td>1.322</td>
<td>1.335</td>
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<tr>
<td></td>
<td>[0.229]</td>
<td>[0.234]</td>
<td>[0.252]</td>
<td>[0.254]</td>
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- Minister controls: No, Yes
- Government controls: No, Yes
- Prime Minister fixed effects: No, Yes
- Prime Minister x Term fixed effects: No, Yes
- Stratification by Individuals: Yes, No

Observations: 25,572

Notes: Standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. See Table 1 for the definition of variables. The ministerial controls included are only those that are time varying.

<table>
<thead>
<tr>
<th>Variables</th>
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<th>(2)</th>
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<th>(4)</th>
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</thead>
<tbody>
<tr>
<td>First individual call for resignation</td>
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<td>0.789</td>
<td>1.387</td>
<td>1.197</td>
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<td>[0.314]</td>
<td>[0.262]</td>
<td>[0.512]</td>
<td>[0.512]</td>
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<tr>
<td>Second or higher individual call for resignation</td>
<td>20.100***</td>
<td>4.721***</td>
<td>4.347**</td>
<td>18.847***</td>
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<td>[17.583]</td>
<td>[2.097]</td>
<td>[2.788]</td>
<td>[9.604]</td>
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<td>Cumulative government resignation calls</td>
<td>0.493***</td>
<td>0.760***</td>
<td>0.782***</td>
<td>0.935***</td>
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<td>[0.037]</td>
<td>[0.023]</td>
<td>[0.027]</td>
<td>[0.018]</td>
</tr>
<tr>
<td>First individual call X Cumulative government calls</td>
<td>1.424***</td>
<td>1.152***</td>
<td>1.063*</td>
<td>1.080***</td>
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<tr>
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<td>[0.128]</td>
<td>[0.040]</td>
<td>[0.038]</td>
<td>[0.030]</td>
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<td>Second individual call X Cumulative government calls</td>
<td>0.991</td>
<td>1.110**</td>
<td>1.015</td>
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<td>[0.134]</td>
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<td>[0.055]</td>
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<td>Minister controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Prime Minister x Term fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>15,564</td>
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</table>

Notes: Standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. See Table 1 for the definition of variables. Column 1 is estimated up to the first 18 months of government only and column 2 is estimated up to to 36 months in office. Column 3 is estimated with those governments between 1945 to 1970 (including Wilson 1966-70) and Column 4 is estimated with those in government from 1970 to 1997 (starting with Heath 1970-74).
Figure 1: Cumulative Resignation Calls by Government 1945-1997
Figure 2. Survivor Function for Ministerial Duration by Individual Resignation Calls

Notes: $r=1$ when one or more individual resignation calls have been received and 0 otherwise.

Figure 3. Survivor Function for Ministerial Duration by Cumulative Number of Government Resignation Calls Below or Above the Median

Notes: The median number of resignation calls is 8. $\text{cr\_high}=1$ if the number of cumulative government resignation calls is bigger than the median and 0 otherwise.
Figure 4. Survivor Function by Individual Resignation Calls

a. Governments with less than the median number of cumulative resignation calls

b. Governments with more than the median number of cumulative resignation calls

Notes: \( r = 1 \) when one or more individual resignation calls have been received and 0 otherwise. The median number of cumulative government resignation calls is 8.