Party Politics and the Survival of Central Bank Governors

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Abstract. Legally independent central banks leave elected politicians with little direct control over monetary policy. The most important indirect channel of influence for governments thus consists in appointing likeminded central bank officials and removing those with divergent preferences. This premise is tested by examining the effect of partisan ties between central bank governors and governments or presidents in 30 European democracies between 1945 and 2012. Drawing on an original data set containing information on the party affiliations of 196 governors, event history models are employed to show that affiliation with a party represented in the executive (government or the presidency) has a large and significant positive effect on governor survival. By contrast, the impact of ties to an opposition party changes over time, turning negative only after a longer period in office.

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Introduction

It is an almost trivial assertion to state that political imperatives and economic necessities often contradict each other. Central banks reside at the intersection of politics and economics and are therefore potential arenas of conflict between the preferences of politicians and what is considered prudent macroeconomic policy by appointed technocrats. In anticipation of such conflict, politicians may try to fill leading positions at the central bank with likeminded agents and remove individuals with ideologically incommensurate views.

This study is concerned with the impact of party affiliation on the odds that central bank governors will be replaced. More specifically, it examines the partisan background of 196 central bank governors in 30 European countries between 1945 and 2012 to examine whether preference divergence between governors and the executive (the government or the president) is associated with a higher probability of governor turnover.

Governors are by no means the only relevant policy makers at any central bank, yet they are often the most important ones. While the creation of the European Monetary Union (EMU) and with it the centralization of monetary policy at the European Central Bank (ECB) has clearly diminished the significance of the central banks in the seventeen EMU member states, the governors of these national institutions have retained much of their significance as members of the ECB Governing Council.

The paper proceeds as follows. The theoretical section offers a short sketch of the literature on central bank independence and discusses how research on delegation and party patronage can inform our expectations about the political determinants of governor turnover. The next section discusses the empirical strategy and gives a descriptive account of the data. The analysis then employs event history models to gauge the effect of party affiliation on the survival of central bank governors. The final section concludes.

Theoretical framework

Central bank independence and monetary policy

The theoretical and empirical literature on central bank independence (CBI) is vast (for recent overviews, see e.g. Berger et al. 2001; Cukierman 2008; Klomp and de Haan 2010b). This is not only because of the crucial role that central banks play as macroeconomic actors in
general, but also because there is substantial theoretical and empirical evidence for the proposition that higher levels of central bank independence lead to lower inflation.

The theoretical argument for the relationship between central bank independence and inflation outcomes is based on the notion that monetary policy makers face a time-consistency problem (Kydland and Prescott 1977). At any specific point in time, governments cannot credibly commit to implementing a non-expansionary monetary policy in the future. Agents in the private sector (e.g. wage bargainers) will anticipate this commitment problem and thus adapt their inflation expectations accordingly. As a result, inflation will be higher than optimal. The solution to this problem is to delegate monetary policy to an independent central bank that commits to a low-inflation target (Rogoff 1985; Walsh 1995). Such a commitment will not only solve the government’s credibility problem vis-à-vis other economic agents, it may also incur other benefits such as forcing politicians to rein in public accounts through fiscal discipline rather than by inflating away debt (Grilli et al. 1991: 365).

Empirically, the link between central bank independence and inflation is quite robust, although with variation across sets of countries. In one of the first and most comprehensive studies, Cukierman et al. (1992) develop an index of legal central bank independence (coded based on legal provisions and bank statutes) and find evidence for a relationship between inflation and CBI for developed economies but not for developing countries in the period from 1950 to 1989. Grilli et al. (1991) use similar indicators for political and economic independence to examine inflation outcomes in 18 OECD countries. They conclude that higher CBI leads to lower inflation without negatively impacting on a country’s performance in other areas such as economic growth and the rate of unemployment (see also Alesina and Summers 1993).

These early studies were soon complemented by a myriad of further examinations, many of which refined and specified the empirical link between CBI and inflation. In what amounts to the most conclusive meta-analysis to date, Klomp and de Haan (2010b) conclude on the basis of a meta-regression of 59 studies that there is a ‘true’ link between CBI and inflation which is robust across a number of specifications. Given the solid evidence of the beneficial effects of central bank independence, it is hardly surprising that there has been a marked trend towards higher levels of CBI in many parts of the world (Polillo and Guillén 2005), even though there are systematic differences in CBI that can be attributed to

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1 As a case in point, take the attempt by the Hungarian government in late 2011 to boost its clout over its central bank, the Magyar Nemzeti Bank, mostly by increasing its powers of appointment. This spurred widespread criticism from politicians across Europe and from the European Central Bank (ECB) and the International
institutional characteristics such as bicameralism or the presence of coalition and minority governments (Bernhard 1998, 2002). Also, it has recently been shown that the interaction between CBI and government ideology can explain variation in macroeconomic outcomes (Belke and Potrafke 2012).

**Removing and appointing central bankers**

The prominence of central bank independence as a research subject and the adoption of central bank reforms in many parts of the world (consider, for instance, the creation of the European Central Bank as one of the most independent central banks on the globe) have turned scholarly attention to the appointments and removals of high-ranking central bank officials. This is in no small part due to the fact that one of the key concepts through which central bank independence has been operationalized empirically is the turnover rate of central bank governors (Cukierman 1992; Cukierman and Webb 1995; Cukierman et al. 1992; Keefer and Stasavage 2003; Oatley 1999; Sturm and de Haan 2001). The basic premise behind this approach is that governments often have incentives to keep interest rates low (e.g. in order to contain unemployment). If central bank governors are unwilling to follow this course, they may be replaced by individuals who are deemed more responsive to the preferences of the government. Higher turnover rates among central bank governors thus indicate not only that politicians are able to exert influence over the top-level executives in central banks but also that they are willing to use these powers to their own ends, even at the risk of damaging the reputation of their countries’ monetary policy institutions. Thus, the examination of governor turnover does not reveal information about the legal basis of a core aspect of central bank independence but also its real-world implications.

The appointments and the turnover of central bank governors have hence become a prominent area of research. One set of studies examining the appointment of central bankers mostly revolves around how politicians use their powers of appointment to influence monetary policy. Chappell et al. (1993) show that members of the Federal Open Market Committee (FOMC) in the U.S. Federal Reserve vary systematically in their preferences. *Ceteris paribus*, central bankers appointed by Democratic presidents favor easier monetary policy than those appointed by Republican presidents. However, Falaschetti (2002) challenges this view and presents evidence to the contrary: Both, Republican and Democrat appointees, favor loose monetary policy if they were appointed under unified control of the Senate and the

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Monetary Fund (IMF). The Hungarian government had to backtrack from its plan just a few months later as a part of loan negotiations with those institutions.
Presidency. In one of the most thorough studies of the FOMC to date, Chang (2003) proposes a formal model of appointments to the FOMC and thus identifies conditions under which the president, the Senate, or neither may influence monetary policy.

Studies outside the U.S. context have largely focused on central banks in larger European economies. Hix et al. (2010) demonstrate that the British government can move the position of the median voter on the Bank of England’s Monetary Policy Committee (MPC) through the Chancellor’s powers of appointment. However, they do not find evidence that these changes helped the government produce a political business cycle effect (i.e. loosening of monetary policy in the run-up to elections and tightening afterwards). Other studies of the Bank of England have examined differences between internal and external members of the MPC (Gerlach-Kristen 2009) and individual determinants of dissenting voting behavior (Harris et al. 2011).

Also, the German Bundesbank has received quite a lot of scholarly attention. Vaubel (1997) shows that monetary policy expansion in the pre-election period is more likely when the political majority in the central bank council is aligned with the government. This finding was challenged by Berger and Woitek (1997) who maintain that a re-examination of the data with better model specifications yields no evidence for such partisan behavior. However, the same authors contend that conservative appointees differ, *inter alia*, in that they react more strongly to changes in inflation and economic output (Berger and Woitek 2005).

Taken together, these and many other studies suggest that ideological differences between monetary policy makers matter a great deal in terms of macroeconomic outcomes. In addition, there are several studies that reach a similar conclusion by using proxy variables to measure divergent policy preferences among central bankers. Göhlmann and Vaubel (2007) demonstrate that former central bank staff produce considerably lower inflation than former politicians and union leaders. Vuletin and Zhu (2011) find that removals of central bank governors only cause in inflation when they are replaced with individuals drawn from the government bureaucracy.

In an even more sophisticated cross-national study, Adolphe (2013) demonstrates that variation in central bankers’ career backgrounds and potential future trajectories (e.g. in private banking, business, academia, politics, the government bureaucracy, or the central bank) socializes or incentivizes them to accommodate the preferences of their former or prospective employers and thus accounts for a considerable amount of variation in inflation and unemployment.
While many studies have researched appointments of central bankers, the variant of
the CBI-related literature that directly examines the survival of central bank governors has
developed only in the past few years. Dreher et al. (2008, 2010) show that, aside from
economic factors such as inflation and the development of the financial sector, the number of
veto players and the occurrence of elections have an impact on the probability of governor
turnover. Also, it has been demonstrated that governors have longer tenures following the
implementation of central bank reforms which usually strengthen CBI (Klomp and de Haan
2010a). Finally, governor turnover in emerging markets has been shown to have a negative
impact on stock prices and bond yields (Moser and Dreher 2010).

The role of party politics in delegation
The purpose of the present study is to contribute to the emerging research on the determinants
of governor turnover by bringing in one critical explanatory factor that has hitherto been
spared from the analyses: the partisan affiliation of central bank governors. It thus seeks to
connect the studies of governor survival with the appointment-oriented literature that
examines preference convergence between politicians and central bankers. In so doing, it
draws on research on delegation and party patronage.

The gist of the discussion above is that there is solid evidence for the importance of
the preferences and personal characteristics of central bankers for monetary policy-making.
Politicians who have a genuine interest in helping to produce electorally beneficial
macroeconomic outcomes therefore have clear incentives to appoint individuals with
government-aligned preferences to monetary policy committees and remove those appointees
that may be at odds with the government’s policy course of action. This is because the legal
independence that they have at some point in time awarded to the central bank typically
prevents them from interfering directly with the central bank’s policy-making. In other words,
central bank independence severs the principal-agent link relationship between politicians and
monetary policy-makers, thus generating the potential for agency loss.

The delegation literature has long argued that preference alignment between principals
and agents can serve as a mechanism of ex-ante control to avoid agency loss. The ally
principle (Bendor et al. 2001; Bendor and Meirowitz 2004; Epstein and O’Halloran 1999;
Huber and Shipean 2006) holds that the degree of autonomy given to an agent increases as the
preference divergence between principal and agent shrinks. Politicians can minimize
preference divergence by appointing agents with similar ideological predispositions. One of
the most valid information shortcuts with respect to a person’s ideological views is his or her
partisan orientation. To be sure, nominees for high positions in central banks will usually be scrutinized extensively. However, party labels still provide crucial information about an individual’s views that may otherwise go unobserved. In addition, one may even expect that partisan loyalties between the government and the governor will reinforce the central bank’s responsiveness to politicians’ preferences beyond mere ideological convergence. Such ties may, for instance, keep channels of communication open and facilitate the exchange of information.

There is, in fact, solid evidence that governments around the world use their appointment powers to promote co-partisans. U.S. presidents politicize top-level positions in the public sector to raise the responsiveness of government agencies (Lewis 2008), even if this turns out to be harmful in terms of bureaucratic performance (Gallo and Lewis 2012; Lewis 2007). Top-tier managers in English local government face higher risks of removal after changes in the partisanship of the council majority (Boyne et al. 2010). A similar logic applies to senior bureaucrats in post-communist Hungary (Meyer-Sahling 2006). Likewise, management boards in Austrian state-owned corporations are staffed according to the partisan preferences of governments and individual ministers (Ennser-Jedenastik 2013a, b).

While all of this research shows that politicians prefer to appoint co-partisans to key positions in the public sector, it cannot convincingly answer the question whether these patterns emerge because of attempts to minimize agency loss and facilitate delegation or because politicians seek to hand out spoils to followers in return for electoral or financial support. In other words, the motivation behind these appointments is unclear. One the one hand, politicians may be intrinsically policy-oriented and therefore use their appointment powers to make the bureaucratic apparatus more responsive to their preferences. On the other hand, politicized appointments may simply be a way of buying loyalty from party adherents. Empirically, the two motivations often have similar, if not identical, implications. The literature on party patronage has coined the terms reward and control as denoting the underlying reasons for appointing co-partisans (Kopecký et al. 2012; Kopecký and Scherlis 2008).

One of the main benefits of studying central bank governors is that, while reward motives cannot be ruled out, it can safely be argued that the desire to exert control over monetary policy is very likely to be a major driver of the appointment process. This is because central bankers have command over powerful policy instruments (e.g. control over the money supply and the setting of interest rates) that potentially have a dramatic impact on the economic performance of a country and thus on the government’s electoral prospects.
To sum up, the gist of the theoretical argument that this paper makes is as follows. Central banks determine monetary policy and thus have a huge impact on macroeconomic outcomes. Politicians (for either electoral reasons or genuine policy concerns) prefer some outcomes over others and would therefore like to exert influence over central banks. However, since legal central bank independence often impedes direct political interference with monetary policy, politicians must resort to indirect means of wielding control. The most obvious way to do so is to appoint people with similar preferences to leading positions in central banks and remove those that have different ideological views. Since ideology and policy preferences are difficult to observe, politicians use a simple information shortcut: partisan affiliation.

When applying this theorizing to the impact of partisan ties on the survival of central bank governors, the following prediction emerges:

*Central bank governors affiliated with the government will have longer tenures whereas those affiliated with the opposition will be removed more quickly.*

The next section outlines the empirical strategy and presents some descriptive information about the data. The analytical section then puts the above prediction to an empirical test.

**Empirical strategy and data description**

The empirical part of this paper draws on an original data set containing information on 196 central bank governors in 30 European countries (EU-27 plus Iceland, Norway, and Switzerland). The data thus cover all governors appointed by democratically elected governments in these countries between 1945 and 2012. Interim appointments were discarded. For each governor a number of variables were coded. The central piece of information is, of course, party affiliation. To gather information on whether central bankers have party ties, a number of sources were consulted: official CVs and biographies, biographical databases, government and party documents, annual reports of central banks, and media archives. Party affiliation was determined along the following criteria: having held public office (e.g. president, prime minister, minister, junior minister, member of parliament) or party office (e.g. party leader, party secretary), having been a member of a party, having worked as an aide for a politician or a party (typically as a member of a minister’s cabinet), or
being depicted in media reports or historic accounts as being affiliated with a specific party. While the latter criterion is potentially problematic in terms of validity, it should be noted that this group comprises only six governors of which some may, in fact, be party members whose ‘true’ degree of affiliation is imperfectly observed. In total, no less than 92 of the 196 individuals in the data set have discernible party ties, most of them having served as ministers, MPs, or as aides in some high-ranking politician’s cabinet.

This information was then combined with data on the partisanship of those authorities that have the power to appoint the central bank governor. Formal appointment procedures vary considerably across countries. In many cases the head of state formally confirms a nominee put forward by the government (e.g. Austria, Germany) or an individual minister (e.g. Spain, United Kingdom). In some countries there is a vote of confirmation in the parliament (e.g. Bulgaria, Latvia, Poland), typically after candidates have been nominated by the president. In a few countries the head of state (usually a president) exerts actual power over the appointment process and even risks severe conflict with other branches of government (e.g. the Czech Republic).²

In order to simplify the coding process, the partisanship of the president was taken as a reference point in those countries where he or she exerts more than formal powers (Czech Republic, Estonia, Finland). The partisanship of the government was taken as the reference point in those countries where the government as a whole, an individual minister, or a parliamentary majority has the final say over the appointment of the governor.³ To be sure, not all governments command majorities in parliament, and individual ministers may diverge in their preferences from the cabinet as a collective (especially in coalition governments, see Andeweg 2000; Laver and Shepsle 1996). However, the central argument for this simplification is that minority governments that are generally viable are also in a good position to find sufficient parliamentary support for a candidate they prefer. Also, coalition parties have a whole arsenal of control and punishment mechanisms (not the least of which is the threat to withdraw their support for the government) to keep individual ministers from deviating too far from the coalition’s ideal policy.

The information on the governors’ party affiliations and the partisanship of the government or president were then combined to code for each year two dummy variables that

² Consider the nomination of Zdeněk Tůma in 2000 for which the president, Václav Havel, was heavily criticized in public by both major parties, the governing ČSSD and the oppositional ODS. At the time, both parties attempted to limit the central bank’s independence and tried to strengthen the government’s influence over the appointment process at the expense of the president’s powers.

³ However, the substantive results presented below remain unchanged if ‘affiliation with the president’ is recoded to ‘affiliation with the government’ for the Czech Republic, Estonia, and Finland.
indicate a governor’s affiliation to a party represented in government or the presidency (‘government affiliation’), or a governor’s ties to a party not represented in these institutions (‘opposition affiliation’). The reference category for both indicators is thus the group of nonpartisan governors. In combination, these two dichotomous variables can be thought of as a measure of the governor’s ‘partisan congruence’ with the appointing politician(s) and serve as the main explanatory variables in the following analysis.

A number of control variables are included in the analysis. First, Cukierman’s index of central bank independence (Cukierman 1992; Cukierman et al. 2002; Cukierman and Webb 1995) captures variation in the degree of legal autonomy that central banks have. The updated version of the index provided by Polillo and Guillén (2005) was used for more recent years.

Also, the analysis includes a lagged measure of inflation to account for the fact that higher prices may result in a greater probability of governor turnover (Dreher et al. 2008). The bulk of the data are taken from the OECD and supplemented by information obtained from the countries’ national statistical offices.

Following Dreher et al. (2010), a lagged indicator for election years is included to account for possible changes in the overall political balance of power that are not captured by the party affiliation variables.

At the individual level, the analysis controls for governors’ age, gender, and insider status. This last variable takes on the value 1 if an individual has had experience working at the central bank before he or she was appointed governor.

The dependent variable is the duration of the governors’ tenures. Modeling durations as the dependent variable requires the use of event history models (Box-Steffensmeier and Jones 2004; Cleves et al. 2002). These models have been widely applied in analyzing the survival of a large range of office holders, from governments (Diermeier and Stevenson 1999, 2000; Laver 2003) and individual ministers (Huber and Martinez-Gallardo 2008) to appointed bureaucrats (Wood and Marchbanks III 2008).

The most critical decision to make when using event history models is to choose a meaningful censoring regime. Censored observations are those that end before the actual failure event occurs. In the present case, observations are censored if they extend beyond the year 2012 (i.e. the governor is still in office) or when removal from office is due to any of the

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4 More precisely, the coding of the party affiliation variable refers to the last day of each year in those cases where changes in the partisanship of the government/presidency occur.
following reasons: (1) death, (2) illness, (3) promotion to a higher office, \(^5\) (4) reaching the legal age limit, (5) reaching the maximum number of terms allowed.\(^6\)

Figure 1 displays the distribution of duration times for the 196 governors. The median duration is 2195 days (mean: 2509, standard deviation: 1767). Two individuals have exceptionally long tenures: Jóhannes Nordal was governor of the Central Bank of Iceland from 1965 until 1993, and Erik Hoffmeyer headed the Danish National Bank from 1965 until 1994.

**Figure 1: Distribution of governors’ survival times**

![Graph showing distribution of governors' survival times](image)

To get a first impression of the variation in survival times across countries, Figure 2 plots the extended means of the duration times by country. This measure takes into account that censored observations do not represent the ‘true’ durability of governors.\(^7\) A cursory glance at the graph illustrates that there are vast differences between countries. The top end of the chart is populated by many of the younger democracies in Eastern Europe and the Mediterranean region. At the bottom we find the bulk of the established democracies of Western and Northern Europe (including Denmark which is left out of the illustration because the extended mean of its governors’ survival time is so large).

This huge amount of cross-national variation suggests that country fixed effects should be included in the multivariate analysis to account for country-specific idiosyncrasies that are not captured by other variables.

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\(^5\) Several governors were called to serve as heads of caretaker cabinets (e.g. Lucas Papademos in Greece, 2011) or were promoted to fill high posts at the ECB or other international monetary institutions.

\(^6\) Countries such as Belgium and Denmark have statutory age limits for their governors. In other countries, e.g. the United Kingdom or Spain, the number of terms a governor can serve is limited.

\(^7\) More specifically, the problem of censored observations is circumvented by fitting an exponential curve to extend the Kaplan-Meier survival estimate and then computing the area under the curve (Barker 2009).
Figure 2: Average tenure by country in days (extended means)

Note: Dots represent extended means, thus taking censored observations into account (see Cleves et al. 2002: 120). Luxembourg is discarded because the only Luxembourgish individual in the data set is censored. Denmark is left out of the graph because its extended mean is at over 26600 days. The vertical grey line indicates the global extended mean.

Note that many of the independent variables are, in fact, time-varying covariates (TVCs), that is, their value may change over the life course of an individual. Governments change, parties move from government to the opposition, inflation rates fluctuate from year to year. The data set is therefore set up such that each governor’s tenure is split into one-year-spells. The statistics in Table 1 are thus based on an N much larger than the 196 governors.

Table 1: Descriptive statistics of the independent variables:

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (spells)</th>
<th>N (governors)</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affiliation with government</td>
<td>1513</td>
<td>196</td>
<td>0.30</td>
<td>0.46</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Affiliation with opposition</td>
<td>1513</td>
<td>196</td>
<td>0.16</td>
<td>0.36</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Election year (t−1)</td>
<td>1513</td>
<td>196</td>
<td>0.28</td>
<td>0.45</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Inflation (t−1, logged)</td>
<td>1488</td>
<td>196</td>
<td>2.90</td>
<td>0.52</td>
<td>0.35</td>
<td>6.99</td>
</tr>
<tr>
<td>Central bank independence</td>
<td>1513</td>
<td>196</td>
<td>0.51</td>
<td>0.23</td>
<td>0.09</td>
<td>0.92</td>
</tr>
<tr>
<td>Insider</td>
<td>1489</td>
<td>192</td>
<td>0.50</td>
<td>0.50</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Gender (male=0, female=1)</td>
<td>1513</td>
<td>196</td>
<td>0.02</td>
<td>0.15</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Age</td>
<td>1472</td>
<td>189</td>
<td>56.40</td>
<td>8.67</td>
<td>29</td>
<td>77</td>
</tr>
</tbody>
</table>
Note: Variation in N is due to missing information on inflation, insider status, and age. The original inflation variable has been transformed by ln(inflation+12) in order to reduce the skew of the variable while preserving observations with negative inflation rates.

**Analysis**

Before the multivariate analysis is presented, Figure 3 provides non-parametric Kaplan-Meier estimators by party affiliation. The lines depict the probability that an individual survives beyond a specific point in time. From this descriptive graph alone, there seems to be good evidence for the impact of partisan ties on governor survival. Compared with the nonpartisan group of governors, affiliation with the government clearly boosts duration times, whereas affiliation with an opposition party leads to below-average tenure lengths. However, the illustration also suggests that, compared to the nonpartisan group of governors, the premium that government affiliates receive is larger than the loss in survival time incurred by opposition affiliates.

**Figure 3: Kaplan-Meier survival estimates by affiliation**

The multivariate analysis of duration data requires a choice between semi-parametric and parametric models. The semi-parametric regression model based on work by Cox (1972) has come to be viewed as the superior option for many applications, since it requires no assumptions to be made about the distributional form of the duration times (Box-Steffensmeier and Jones 2004: 47). However, for the current purpose, the Cox model turns out to be inadequate, since several of the covariates violate the proportional hazards assumption. The standard remedy to this problem is to include into the regression models an interaction

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8 As noted above, the terms ‘government’ and ‘opposition’ are used as shorthand terms for ‘affiliation with the government or presidency’ and ‘affiliation with a party not holding the presidency or government office’.
term between the offending variables and some function of time (Box-Steffensmeier and Jones 2004: 131-7). Yet, these interaction terms cause the model not to converge, thus making inferences impossible.

To circumvent this problem, a parametric Weibull model has been chosen as the alternative. A series of other functional forms were tested, yielding very similar coefficient sizes and standard errors. \(^9\) None of the substantive conclusions below would be altered by a different choice of the functional form.

The Weibull model assumes a monotonic baseline hazard. The hazard rate can be expressed as

\[
h(t) = \lambda p(\lambda t)^{p-1}
\]

where \(t\) is time, \(\lambda\) is a scale parameter, and \(p\) is a shape parameter whose value determines the shape of the baseline hazard. The hazard function thus takes on the following form

\[
h(t|x_i) = pt^{p-1} \exp(\beta_0 + x_i\beta_x)
\]

where \(x_i\) represents a vector of covariates.

Table 2 presents six regression models, testing the affiliation indicators separately at first and then combined. Models 4 to 6 introduce the control variables, thus highlighting that the effect of partisanship is largely unaffected by including the other covariates. Overall, the hazard ratios indicate that party affiliation is a major determinant of governor turnover, even after controlling for inflation, the degree of legal independence, gender, age, insider status, and (other) cross-national differences that are captured by the country fixed effects. According to model 6, party ties to the government (or president) lower the risk of being removed within a given time span by about 46 percent. It can thus safely be argued that partisan ties are not only statistically significant but also substantively meaningful predictors of governor survival.

A more specific look at the differences between the six models reveals that the opposition affiliation covariate, while significant in models 2 and 5, becomes insignificant once government affiliation is included in the analysis. This corroborates the impression given by Figure 1. While opposition affiliates have below-average survival times compared with all

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\(^9\) The exponential, Gompertz, loglogistic, and lognormal models yield substantively identical results. Choosing the gamma distribution causes non-convergence.
other governors, they do not differ from nonpartisan governors with respect to the length of their tenure. The significant hazard ratios in models 2 and 5 are thus a result of comparing opposition affiliates against a heterogeneous reference group comprised of both nonpartisans and government affiliated governors.\textsuperscript{10}

<table>
<thead>
<tr>
<th>Table 2: The impact of party affiliation on the survival of governors</th>
</tr>
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<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Affiliation: government</td>
</tr>
<tr>
<td>Affiliation: opposition</td>
</tr>
<tr>
<td>Election year (t–1)</td>
</tr>
<tr>
<td>Central bank independence</td>
</tr>
<tr>
<td>Inflation (t–1, logged)</td>
</tr>
<tr>
<td>Insider</td>
</tr>
<tr>
<td>Gender (male=0, female=1)</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Country fixed effects</td>
</tr>
<tr>
<td>Shape parameter $p$</td>
</tr>
<tr>
<td>N (governors)</td>
</tr>
<tr>
<td>N (spells)</td>
</tr>
<tr>
<td>Log likelihood</td>
</tr>
<tr>
<td>AIC</td>
</tr>
</tbody>
</table>

Note: Figures are hazard ratios from Weibull regressions; standard errors clustered on countries; p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure 4 displays the survival functions based on model 6, with all other covariates held constant at their respective means (continuous variables) or modes (indicator variables). Again, it becomes visible that the survival function for government affiliates consistently displays higher values than that for the two other groups. It falls below the 50 percent mark a full four years after the nonpartisans’ function and almost five years after the opposition affiliates’ curve. By contrast, the difference between nonpartisans and governors with ties to

\textsuperscript{10} Removing the country fixed effects from the analysis yields a statistically significant effect of opposition affiliation in model 6.
the opposition is rather small, as indicated by a mere 10-month difference between the points at which the two functions intersect the 50 percent line.

**Figure 4: The impact of party affiliation on governor survival**

The other variables in Table 2 mostly display the expected effects. The lagged election year indicator produces a coefficient in the ‘right’ direction, but it fails to reach conventional levels of statistical significance in all models. The data thus do not support the notion that post-election periods are in and by themselves associated with greater hazards for central bank governors.

By contrast, higher levels of CBI are clearly related to greater chances of survival. According to the hazard ratio in model 6, the head of a maximally independent central bank (CBI=1) would face an 82 percent lower risk of removal than the head of a fully non-independent central bank (CBI=0).\(^\text{11}\) Higher levels of legal central bank independence therefore shield governors from being discarded. This result chimes with the CBI literature that uses governor turnover as a proxy for central bank independence. The two concepts may not necessarily be equivalent but they are clearly related.

Also, inflation levels at \(t-1\) have a bearing on the survival of governors. The logged covariate makes intuitive interpretation of the hazard ratios somewhat difficult, but it is clear that governors are more likely to lose their job the higher the level of inflation, thus corroborating the results reported by Dreher et al. (2008).

\(^{11}\) The real-world extremes are Spain in the early years after democratization (CBI=0.09) and contemporary Italy and Germany (CBI=0.92).
The impact of CBI and inflation on the survival of governors is illustrated by the graphs in Figure 5. Whereas the effect of CBI appears quite substantial considering the real-world variation in legal central bank independence (the observations in the data set are spread out almost uniformly across the range from 0.15 to 0.92), the effect of inflation is relatively modest given that 80 percent of the observations display values in the single digits.\footnote{It should be noted, though, that CBI has gone up sharply as a consequence of legal requirements imposed on member states of the European Monetary Union (EMU).}

**Figure 5: The impact of central bank independence and inflation on governor survival**

As to the remaining individual-level covariates, insider status and gender have no discernible impact on survival, whereas age does. Older governors have higher hazards than younger ones, with each additional year increasing the chances of removal by about 3.4 percent (based on model 6).

The shape parameters for all models in Table 2 are larger than one, thus indicating a baseline hazard that increases monotonically over time. Conditional on the covariates, governors thus face rising hazards over the course of their time in office.

Yet, it may not only be baseline hazards that are time-dependent, but also the size and direction of the effects of the covariates that shift as time passes. In order to detect potential changes in the impact of the party affiliation indicators over the life course of governors, Table 3 presents regression models that include interaction effects with the log of time. This is a standard procedure to trace the time-dependency of the impact of covariates in event history models (Box-Steffensmeier et al. 2003; Licht 2011).

The interaction of government affiliation and time cancels out the original effect, thus suggesting that the impact does not change (monotonically) over time. However, there seems to be a significant time-dependent change in the impact of opposition affiliation. Note that the
extremely large hazard ratios of 2668 and 4343 in models 8 and 9 only refer to an opposition affiliated governor’s hazard on his first day in office. With each further day in office, the risk of being removed increases substantially, as indicated by the significant hazard ratio for the interaction term between opposition affiliation and time.

Table 3: Exploring the effect of party affiliation over time

<table>
<thead>
<tr>
<th></th>
<th>Model 7</th>
<th>Model 8</th>
<th>Model 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affiliation: government</td>
<td>0.0782</td>
<td>1.240</td>
<td>(0.393)</td>
</tr>
<tr>
<td></td>
<td>(0.540)</td>
<td>(0.962)</td>
<td></td>
</tr>
<tr>
<td>Affiliation: government × ln(time)</td>
<td>1.269</td>
<td>0.890</td>
<td>(0.019)</td>
</tr>
<tr>
<td></td>
<td>(0.540)</td>
<td>(0.843)</td>
<td></td>
</tr>
<tr>
<td>Affiliation: opposition</td>
<td>2667.7**</td>
<td>4342.6*</td>
<td>(0.019)</td>
</tr>
<tr>
<td></td>
<td>(0.051)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affiliation: opposition × ln(time)</td>
<td>0.379**</td>
<td>0.340*</td>
<td>(0.026)</td>
</tr>
<tr>
<td></td>
<td>(0.052)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Election year (t–1)</td>
<td>1.376</td>
<td>1.388</td>
<td>1.397</td>
</tr>
<tr>
<td></td>
<td>(0.227)</td>
<td>(0.221)</td>
<td>(0.204)</td>
</tr>
<tr>
<td>Central bank independence</td>
<td>0.189**</td>
<td>0.174**</td>
<td>0.179**</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.039)</td>
<td>(0.016)</td>
</tr>
<tr>
<td>Inflation (t–1, logged)</td>
<td>1.676***</td>
<td>1.831***</td>
<td>1.775***</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.002)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Insider</td>
<td>1.136</td>
<td>1.128</td>
<td>1.139</td>
</tr>
<tr>
<td></td>
<td>(0.660)</td>
<td>(0.689)</td>
<td>(0.662)</td>
</tr>
<tr>
<td>Gender (male=0, female=1)</td>
<td>1.065</td>
<td>1.603</td>
<td>1.406</td>
</tr>
<tr>
<td></td>
<td>(0.972)</td>
<td>(0.721)</td>
<td>(0.824)</td>
</tr>
<tr>
<td>Age</td>
<td>1.031*</td>
<td>1.041***</td>
<td>1.034***</td>
</tr>
<tr>
<td></td>
<td>(0.060)</td>
<td>(0.006)</td>
<td>(0.040)</td>
</tr>
<tr>
<td>Country fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Shape parameter p</td>
<td>1.882***</td>
<td>2.109***</td>
<td>2.203***</td>
</tr>
<tr>
<td>N (governors)</td>
<td>188</td>
<td>188</td>
<td>188</td>
</tr>
<tr>
<td>N (spells)</td>
<td>1446</td>
<td>1446</td>
<td>1446</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-139.8</td>
<td>-138.5</td>
<td>-135.6</td>
</tr>
<tr>
<td>AIC</td>
<td>339.7</td>
<td>334.9</td>
<td>331.2</td>
</tr>
</tbody>
</table>

Note: Figures are hazard ratios from Weibull regressions; standard errors clustered on countries; p-values in parentheses; *p < 0.10, **p < 0.05, ***p < 0.01.

The picture that thus emerges from Table 3 is that, while government affiliation has a uniformly positive impact over time, the impact of opposition affiliation is time-dependent. At first, the direction of the effect is opposite to what was hypothesized in the theoretical section. Yet, as time passes by, the impact of the covariate steadily weakens and eventually changes its
sign to conform to the expectation that ties to an opposition party increase a governor’s hazard. In order to present this finding more intuitively, Figure 6 graphs the changes in the joint effect of opposition affiliation and opposition affiliation × ln(time) with 90 percent confidence intervals.

**Figure 6: The changing impact of opposition affiliation over time**

![Graph showing the changing impact of opposition affiliation over time](image)

Note: Light-grey area marks 90 percent confidence interval. The dark-grey area indicates the time span during which the joint effect is insignificant at the 10 percent level. First 20 days omitted to enable better graphical representation. The standard error for the joint effect \((b_1 + b_2 \times \ln(t))\) is given by \(\sqrt{\text{var}(b_1) + \ln(t)^2 \times \text{var}(b_2) + 2 \times \ln(t) \times \text{cov}(b_1, b_2)}\). The formula for the 90 percent confidence interval is \((b_1 + b_2 \times \ln(t)) \pm 1.645 \times \text{SE}(b_1 + b_2 \times \ln(t))\) (Golub and Steuernberg 2007).

It becomes clear from the graph that affiliation with a party of the opposition actually (and counter to the theoretical argument presented above) boosts a governor’s chances of survival early in his or her period. Yet, this effect steadily deteriorates and becomes statistically indistinguishable from zero after less than four years. Only after more than 13 years is the impact clearly negative. Figure 6 thus qualifies the insignificant results presented for the opposition affiliation covariate in Table 2. Since the effect changes its sign from positive to insignificant to negative, it is hardly surprising that the aggregate result that is reported by the regression models without the interaction terms yields no statistically significant coefficient. Yet, the interaction models clearly reveal the time-dependency of the effect of opposition affiliation.

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13 Note that all comparisons are still made against the reference group of nonpartisan governors.
Still, while changes over time in the effect of a variable are not surprising *per se*, the direction of the change is somewhat counter-intuitive in this case. For instance, one may have expected that, as time passes, the preferences of a governor become better known among politicians, thus mitigating the impact of the party label. Yet, the data suggest precisely the opposite. Opposition affiliated governors seem to enjoy a ‘grace period’ early in their term, but contrary to government affiliates they see the initial ‘survival premium’ incurred from their political connections dissipate quite rapidly. This may also reflect the fact that it is at times legally or politically impractical for new governments (or presidents) to remove ‘hostile’ central bank governors immediately. However, as time passes, it is likely that the opportunity for replacing a governor arises (e.g. because of some scandal, macroeconomic difficulties, or simply as the statutory term expires). Such opportunities are arguably more likely to be tapped when governors have ties to an opposition party.

**Conclusion**

Central bank governors are among the most important non-elected policy makers in modern democracies. Also, they often enjoy considerable freedom of manoeuvre due to regulations that grant their institutions a substantial degree of legal independence from elected politicians. Thus, the appointment of likeminded governors and the removal of ideologically ‘hostile’ ones becomes the main source of influence that government executives can exert over monetary policy. In order to obtain information about the policy preferences of a governor, party affiliation is one of the most readily available and reliable indicators.

In the analysis above it has been shown that a governor’s ties to a political party in government or opposition have a statistically significant and substantively important impact on their odds of surviving in office. Even after controlling for inflation levels, the degree of legal central bank independence, the occurrence of elections, and several personal characteristics, affiliation with the government (or the president) makes a governor about twice as likely to stay in office in a given time period.

The impact of affiliation with a party not represented in the executive (the government or the presidency) only becomes visible when examining changes over time. Opposition affiliated governors are less likely to be removed very early in their term, yet the odds of survival decrease steadily over the course of their tenure.
By presenting the first comparative study of the impact of partisanship on the survival of central bank governors in Europe, the analysis above adds to the emerging literature on the determinants of turnover among monetary policy makers. Also, it provides important insights for the study of central bank independence.

Since this examination is confined to governors in European democracies, it remains an open question as to whether similar results could be expected for other regions of the world. There is some evidence that non-European economies differ in terms of the relationship between legal CBI, governor turnover, and macroeconomic outcomes (de Haan and Kooi 2000; Fry 1998; Jácome and Vázquez 2008). Also, the generalizability of the above results hinges on the degree to which other countries have stable political systems where party labels are reliable indicators of ideological preferences. In the absence of coherent political parties, other linkage mechanisms may be employed to avoid preference divergence between central bank governors and political actors.

References


Cleves, Mario, Gutierrez, Roberto G., Gould, William and Marchenko, Yulia V. (2002). An Introduction to Survival Analysis Using Stata. College Station, TX: Stata Press.


