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 195 governors, event history models are employed to show that affiliation with a party represented in the executive (the government or the presidency) has a large and significant positive effect on governor survival. However, affiliation with an opposition party only increases governors’ hazards during the first four years of their term, suggesting that the impact of the party label may be overridden as more reliable information about a governor becomes available.

Laurenz Ennser-Jedenastik
Department of Government
Leiden University
l ennser-jedenastik@fsw.leidenuniv.nl

An earlier version of this paper was presented at the ECPR Joint Sessions of Workshops, University of Mainz, March 2013.
**Introduction**

In most Western democracies, central banks are arguably the most independent state institutions apart from the judiciary. This high degree of autonomy severely constrains the influence that elected officials have over monetary policy. The present paper is thus concerned with how politicians use their powers of appointment (and removal) to create preference convergence between the government and the heads of central banks. To that end it investigates the impact of party affiliation on the odds that a sitting central bank governor will be replaced. More specifically, it examines the partisan background of 195 central bank governors in 30 European countries between 1945 and 2012 to test 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. Even in many European countries, where 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 national central banks have retained much of their significance as country representatives 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 political appointments 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; Klomp and de Haan, 2010b; Cukierman, 2008). 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.

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 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 (Grilli et al., 1991, 365).¹

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 and conclude that higher CBI leads to lower inflation without negatively impacting on 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 comprehensive meta-analysis to date, Klomp and de Haan (2010b) conclude on the basis of a meta-regression of 59 studies that there is a link between CBI and inflation which is robust across a number of specifications.

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 ECB as one of the most independent central banks on the globe) have directed scholarly attention to the appointment and removal 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 is the turnover rate of central bank governors (Cukierman, 1992; Cukierman et al., 1992; Cukierman and Webb, 1995; Sturm and de Haan, 2001; Keefer and Stasavage, 2003; Oatley, 1999). Note, however, that there are serious

¹ Especially in economic downturns, the desirability of this strategy is, of course, questionable.

Still, the appointments and the turnover of central bank governors have become a prominent area of research. One set of studies mostly revolves around how politicians use their powers of appointment to influence monetary policy. It has, for instance, been shown that members of the Federal Open Market Committee (FOMC) in the U.S. Federal Reserve vary systematically in their preferences, and that these variations are linked to the partisanship of the appointing president and/or the median senator (Chappell et al., 1993; McGregor, 1996; Falaschetti, 2002). 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 bankers 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. 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). For the German Bundesbank, it has been shown that conservative appointees differ, inter alia, in that they react more strongly to changes in inflation and economic output (Berger and Woitek, 2005).

In one of the most sophisticated studies on monetary policy makers to date, Adolph (2013) demonstrates that variation in central bankers’ career backgrounds and potential future trajectories socializes and/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.

In addition, 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 sector.

While many studies have thus researched the appointment of central bankers and its economic consequences, 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 governor turnover is lower following the implementation of central bank reforms which usually strengthen CBI (Klomp and de Haan, 2010a).

Again, the most thorough analysis of central banker survival to date has been provided by Adolph (2013, 280-303) who establishes that shifts in government ideology increase the risk of a monetary policy maker being replaced. While not directly observing the partisan affiliation of the individual appointees, this represents the strongest evidence to date that the tenures of central bankers are influenced by changes in the ideological complexion of governments.

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 discarded: the partisan affiliation of central bank governors. Drawing on research on delegation and political appointments, it links the studies of governor survival with the literature on partisan appointments of central bankers.

Politicians have a genuine interest in producing electorally beneficial macroeconomic outcomes and thus strong incentives to appoint individuals with government-aligned preferences and remove those appointees that may be at odds with the government’s policy course of action. This is because legal 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 Meirovitz, 2004; Huber and Shipan, 2006; Epstein and O’Halloran, 1999) 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. Research from other parts of the public sector strongly supports the notion that governments around the world use their appointment powers to promote co-partisans (Lewis, 2008; Boyne et al., 2010; Meyer-Sahling, 2006; Ennser-Jedenastik, 2013), even if this turns out to be harmful in terms of bureaucratic performance (Lewis, 2007; Gallo and Lewis, 2012).

To sum up, the thrust 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 195 central bank governors in 30 European countries (EU-27 plus Iceland, Norway, and Switzerland). The data 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. Treating these six cases as nonpartisans does not alter any of the conclusions below. In total, no less than 92 of the 195 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 of the key independent variables, 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

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.
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.

It should be noted that the powers to recall a governor vary across time and countries. Once appointed, many central bank heads are legally protected from being removed at the discretion of the government. In the absence of formal removal authority politicians can choose to let governors sit out their term or mount pressure informally, for example by criticizing governors publicly and thus undermining the credibility of the central bank. While Dreher et al. (2010: 770) note that a large number of governors resign (or are removed) before the end of their statutory term, we can still expect there to be cases where partisan mismatch does not immediately result in governor turnover. In such instances, politicians may simply choose not reappoint the sitting governor but nominate somebody else after the end of the incumbent’s term.

The information on the governors’ party affiliations and the partisanship of the government or president are combined to code for each year two dummy variables that 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 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 added. First, 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. In addition, the dataset also includes GDP growth figures and unemployment rates. GDP data are from the Total Economy Database, supplemented by time series from the Maddison Project. Unemployment time series were taken from the European Commission’s annual macro-

---

4 More precisely, the coding of the party affiliation variables refers to the last day of each year in the few cases where changes in the partisanship of the government/presidency occur. For the vast majority of observations, there is no change in the partisan match between governors and the government during individual years.

5 See [www.conference-board.org/data/economydatabase](http://www.conference-board.org/data/economydatabase) and [www.ggdc.net/maddison](http://www.ggdc.net/maddison), respectively.
economic database (AMECO), and with additional data coming from the ILO as recorded by Mitchell (2003).\(^6\)

Also, Cukierman’s index of central bank independence (Cukierman, 1992; Cukierman and Webb, 1995; Cukierman et al., 2002) 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.

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 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 (Laver, 2003; Diermeier and Stevenson, 1999; 2000) 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 following reasons: (1) death, (2) illness, (3) promotion to a higher office,\(^7\) (4) reaching the legal age limit, (5) reaching the maximum number of terms allowed.\(^8\)

Figure 1 displays the distribution of duration times for the 195 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.

---

\(^6\) In order to make data from different sources comparable, a core source with broad coverage was picked for each economic variable. Missing values in these data were imputed by making out-of-sample predictions based on linear regressions of overlapping time series with other data sources. The average R\(^2\) across all these bivariate regressions was 0.96 (median: 0.97), thus indicating high data consistency.

\(^7\) 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.

\(^8\) 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.
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. 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 will be accommodated in the multivariate analysis through the inclusion of a shared frailty parameter (see below).

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, macroeconomic indicators 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 summary statistics in Table 1 are thus based on an N much larger than the 195 governors.

Analysis
Before looking at the survival of central bank governors, a brief examination of partisan appointment patterns is in order (see Figure 3). Quite unsurprisingly, almost one third of governors appointed by left-leaning governments are from left-wing parties, as opposed to just six percent of appointees under right-wing governments. By contrast, one quarter of governors appointed by left-wing governments are affiliated to right-wing parties, and this share increases to almost half for appointees under right-wing governments. Centrist

---

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).
governments are most likely to appoint nonpartisan governors. Taken together, these data suggest that appointments are strongly influenced by party affiliation, even though there is a strong bias towards appointing conservative central bank governors.\footnote{The analysis below is mostly focused on survival because appointments are difficult to analyze as a dependent variable, since the pool of potential candidates from which appointees are chosen is unknown. Looking at the survival of appointed governors provides a useful alternative strategy to examine the impact of partisanship.}

FIGURE 3 ABOUT HERE

Turning to the effect of party affiliation on tenure, Figure 4 first 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.\footnote{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’.

FIGURE 4 ABOUT HERE

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 entails no assumptions about the distributional form of the duration times (Box-Steffensmeier and Jones, 2004, 47). To account for the clustering of individuals within countries, two sets of models are estimated, one with shared frailties and one with country-fixed effects. For the shared frailty models, the hazard rate for individual \(j\) in country \(i\) is thus given by

\[
h_{ij}(t) = h_0(t) \alpha_i \exp(x_{ij}\beta)\]
where \( h_0(t) \) is the (unspecified) baseline hazard, \( \alpha \) represents the country-level frailty, \( x \) is a set of covariates, and \( \beta \) is a vector of regression coefficients.\(^{12}\)

The Cox model requires the proportional hazards assumption to hold which in the present case is violated by the CBI variable. The standard remedy to this problem is to include into the regression models an interaction term between the offending variable and some function of time, in this case the natural log (Box-Steffensmeier and Jones, 2004, 131-7).

**TABLE 2 ABOUT HERE**

Table 2 presents four regression models. While Models 1 and 3 test only the affiliation indicators, Models 2 and 4 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 partisan linkage with the government is a major determinant of governor turnover, even after controlling for a number of macroeconomic variables, the degree of legal independence, age, and insider status. According to Model 2, party ties to the government (or president) lower the risk of being removed within a given time span by about 49 percent. It can thus safely be argued that partisan ties are not only statistically significant but also substantively meaningful predictors of governor survival.

While government affiliation yields very much the expected results, the covariate for partisan ties to the opposition is not statistically significant. Leaving out the government affiliation predictor (and thus comparing opposition affiliates against a heterogeneous reference group made up of government affiliates and nonpartisans) renders the opposition indicator significant (not reported). This corroborates the impression given by Figure 4. While opposition affiliates have below-average survival times compared with all other governors, they do not differ from nonpartisan governors with respect to the length of their tenure.

**FIGURE 5 ABOUT HERE**

Figure 5 illustrates the central conclusion that emerges from the models reported in Table 2. It displays the survival functions based on Model 2, with all other covariates held constant at

\[ \text{More specifically, } \alpha \text{ is a parameter assumed to have a mean of 1 and a variance of } \theta. \text{ If } \theta \text{ is statistically indistinguishable from zero, the estimation is reduced to the standard Cox model. While country fixed effects are a plausible alternative to the shared frailty specifications (and thus also reported), the limited number of governors and the considerable number of countries suggest that we can expect substantial efficiency gains from the shared frailty models (O’Quigley and Stare, 2002, 3231).} \]

\(^{12}\)
their respective means (continuous variables) or modes (dichotomous 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 almost three years after the nonpartisans’ curve. By contrast, the difference between nonpartisans and governors with ties to the opposition is rather small, as indicated by a mere ten month gap between the points at which the two functions intersect the 50 percent line.

Some of the other variables in Table 2 also 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. 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.

Turning to the macroeconomic covariates, inflation levels at $t−1$ do have a significant bearing on the survival of governors in Model 2, yet the effect is diluted by the inclusion of the country fixed effects in Model 4. Since inflation levels vary systematically across countries, accounting for all between-country variation weakens the effect of this predictor. Yet, it could very well be argued that overall inflation levels are one important dimension across which countries differ, thus making the result in Model 2 appear quite plausible. The hazard ratio greater one indicates 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).

Interestingly, the effect of GDP growth is robust to the fixed effects specification. According to the hazard ratios in Models 2 and 4, each additional percentage point in GDP growth reduces a governor’s risk of removal by five percent.\(^{13}\) Thus, governors appear to be more adversely affected by low growth than by higher inflation, even though most central bank laws in Europe define price stability as the prime goal of monetary policy and several central banks in the sample have even adopted specific inflation targets during the past three decades (Hammond, 2012, 12).\(^{14}\)

The hazard ratios for the unemployment rate remain indistinguishable from 1, thus indicating that there is no statistically significant effect. Unemployment is therefore not related to governor turnover.

Similarly, there is no significant effect of the CBI variable in Model 2. While Model 4 shows a time-dependent impact of CBI on governor turnover, this result is largely an artifact

---

\(^{13}\) This result is robust to the exclusion of extreme outliers at the tails of the distribution of the growth variable.

\(^{14}\) The effects of inflation and growth hold in 29 of the 30 iterations in the jackknife analysis. Omitting Lithuania from the sample causes their p-values to slip below the 10 percent threshold.
due to the inclusion of the country fixed effects, since much of the variation in central bank independence is between countries rather than within countries over time and should therefore be taken with a barrel of salt.\textsuperscript{15} The non-finding with respect to CBI in Model 2 is somewhat at odds with the economic literature that uses the turnover rate of governors as indicators of central bank independence. Also, it contradicts Klomp and de Haan’s (2010a) finding that CBI-enhancing reforms lead to lower turnover probabilities. However, these results were generated not only with a different methodological toolkit but also based on a data set that is not limited to Europe but includes countries from across the world. It may thus well be that the relationship between governor turnover and CBI holds up in a larger comparative context.

As to the remaining individual-level covariates, insider status and age do not have much of an impact on survival. Models 2 and 4 suggest that older governors have higher hazards than younger ones, with each additional year increasing the hazard rate by just over 2 percent. Yet both effects fail to reach the 10 percent significance threshold.\textsuperscript{16}

To sum up, the analysis thus far suggests that party affiliation has a large and significant effect on governor survival whose explanatory power trumps that of legal CBI and macroeconomic performance. More specifically, governors with ties to the government (or the president) outlive their peers by a substantial amount of time, whereas there is little difference between nonpartisans and opposition affiliates.

In order to refine these results, the data can also be used to detect potential changes in the impact of the party affiliation indicators over the life course of a governor. To that end, Table 3 presents regression models that include interaction effects with the log of time. This is a common procedure to trace the time-dependency of the impact of covariates in event history models (Box-Steffensmeier et al., 2003; Licht, 2011; Golub and Steunenberg, 2007).

The interaction of government affiliation and time makes the original effect disappear, thus suggesting that the impact of this covariate 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 for opposition affiliation only refer to a governor’s hazard on his first day in office (when ln(time) equals zero). With each further day in office, the risk of being removed decreases substantially, as indicated by the small and significant hazard ratios for the interaction terms between opposition affiliation and time.

\textsuperscript{15} The appendix elaborates on the changing effect of CBI over time according to Model 4 in more detail.

\textsuperscript{16} To be sure, a number of additional control variables could be specified, especially relating to specific international monetary regimes such as the Bretton Woods system and the European Monetary Union (EMU). However, neither dummy variables indicating membership in these regimes nor interactions of these dummies with the party affiliation covariates yield significant results. This implies that the effect of party ties is not mediated by different international monetary regimes. Due to space limitations, these results are not reported.
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 as hypothesized in the theoretical section. Yet, as time passes by the impact of the covariate steadily weakens and eventually becomes insignificant. In order to present this finding more intuitively, Figure 6 graphs the changes in the joint effect of opposition affiliation and opposition affiliation $\times \ln(\text{time})$ with 95 percent confidence intervals.

TABLE 3 ABOUT HERE

It becomes clear from the graph that affiliation with a party of the opposition greatly diminishes 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 in office before turning significantly negative (thus boosting survival) after a tenure of around fifteen years (although only a very small percentage of all governors survive that long). Figure 6 thus strongly qualifies the insignificant results presented for the opposition affiliation covariate in Table 3. Since the effect changes its sign from positive to insignificant quite rapidly (and eventually becomes 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.

FIGURE 6 ABOUT HERE

The data thus suggest that, as time passes, ideologically ‘hostile’ governors are less and less likely to be punished because of their ties to an opposition party. While they are very much in danger of being replaced early in their term, their hazards do not differ greatly from those of their nonpartisan peers once they have survived in office for a period of four years or longer. This result has a quite plausible interpretation: As the preferences of a governor become better known among government politicians, the impact of the party label is mitigated. This finding lends credibility to the notion that partisanship serves as an information shortcut that may be overridden once more valid information can be obtained from observing real-world behavior.

---

Note that positive raw coefficients indicate greater hazards, i.e. higher chances of removal, and that all comparisons are still made against the reference group of nonpartisan governors.
When governors survive long enough to demonstrate their competence (or, alternatively, responsiveness to the government) in office they can avoid being punished for having ties to the ‘wrong’ party.

**Conclusion**

Central bank governors are among the most important non-elected policy makers in modern democracies. Also, they often enjoy considerable freedom of maneuver 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 elected officials 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 personal characteristics, affiliation with the government (or the president) makes a governor almost 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 more likely to be removed very early in their term, yet after four years in office they face the same odds of removal as their nonpartisan peers, suggesting that the effect of partisanship can be overridden as more valid information about becomes available through observing the behavior of governors in office.

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, highlighting the fact that CBI and governor turnover are two distinct empirical phenomena and that the latter is not necessarily a valid proxy for the former.

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 (Jácome and Vázquez, 2008; de Haan and Kooi, 2000; Fry, 1998). Also, the generalizability of the above results hinges on the degree to which other countries have stable political systems where party labels can be deemed reliable indicators of ideological preferences. In the absence of coherent and persistent political parties, other informal linkage mechanisms may be employed to avoid preference divergence between central bank governors and political actors.

References


Table 1: Descriptive statistics of the independent variables:

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (governors)</th>
<th>N (spells)</th>
<th>Mean</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affiliation with government</td>
<td>195</td>
<td>1513</td>
<td>0.297</td>
<td>0.457</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Affiliation with opposition</td>
<td>195</td>
<td>1513</td>
<td>0.157</td>
<td>0.364</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Election year (t-1)</td>
<td>195</td>
<td>1513</td>
<td>0.279</td>
<td>0.449</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Inflation (t-1), logged</td>
<td>195</td>
<td>1488</td>
<td>2.907</td>
<td>0.523</td>
<td>0.347</td>
<td>6.992</td>
</tr>
<tr>
<td>GDP Growth (t-1)</td>
<td>193</td>
<td>1506</td>
<td>3.174</td>
<td>5.248</td>
<td>-58.32</td>
<td>70.23</td>
</tr>
<tr>
<td>Unemployment (t-1), logged</td>
<td>185</td>
<td>1423</td>
<td>1.746</td>
<td>0.677</td>
<td>-0.629</td>
<td>3.122</td>
</tr>
<tr>
<td>Central bank independence</td>
<td>195</td>
<td>1513</td>
<td>0.505</td>
<td>0.225</td>
<td>0.090</td>
<td>0.920</td>
</tr>
<tr>
<td>Insider</td>
<td>191</td>
<td>1489</td>
<td>0.486</td>
<td>0.500</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Age</td>
<td>195</td>
<td>1513</td>
<td>56.24</td>
<td>8.635</td>
<td>29</td>
<td>77</td>
</tr>
</tbody>
</table>

Note: Variation in N is due to missing information on inflation, growth, unemployment, and insider status. The original inflation variable has been transformed by \( \ln(\text{inflation}+12) \) in order to reduce the skew of the variable while preserving observations with negative inflation rates and thus not biasing the sample by removing deflationary episodes.
<table>
<thead>
<tr>
<th></th>
<th>Shared frailty models</th>
<th>Fixed effects models</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td><strong>Affiliation: government</strong></td>
<td>0.488***</td>
<td>0.513**</td>
</tr>
<tr>
<td></td>
<td>(-2.80)</td>
<td>(-2.40)</td>
</tr>
<tr>
<td><strong>Affiliation: opposition</strong></td>
<td>1.176</td>
<td>1.212</td>
</tr>
<tr>
<td></td>
<td>(-0.67)</td>
<td>(-0.73)</td>
</tr>
<tr>
<td><strong>Election year (t-1)</strong></td>
<td>1.326</td>
<td>1.308</td>
</tr>
<tr>
<td></td>
<td>(-1.41)</td>
<td>(-1.32)</td>
</tr>
<tr>
<td><strong>Inflation (t-1), logged</strong></td>
<td>1.516**</td>
<td>1.367</td>
</tr>
<tr>
<td></td>
<td>(-2.18)</td>
<td>(-1.44)</td>
</tr>
<tr>
<td><strong>GDP growth (t-1)</strong></td>
<td>0.953**</td>
<td>0.945**</td>
</tr>
<tr>
<td></td>
<td>(-2.04)</td>
<td>(-2.27)</td>
</tr>
<tr>
<td><strong>Unemployment (t-1), logged</strong></td>
<td>1.067</td>
<td>0.994</td>
</tr>
<tr>
<td></td>
<td>(-0.36)</td>
<td>(-0.02)</td>
</tr>
<tr>
<td><strong>Central Bank Independence</strong></td>
<td>21.39</td>
<td>17395.3*</td>
</tr>
<tr>
<td><strong>Central Bank Independence × ln(Time)</strong></td>
<td>0.641</td>
<td>0.225*</td>
</tr>
<tr>
<td><strong>Insider</strong></td>
<td>1.172</td>
<td>1.176</td>
</tr>
<tr>
<td></td>
<td>(-0.70)</td>
<td>(-0.62)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>1.022</td>
<td>1.026</td>
</tr>
<tr>
<td></td>
<td>(-1.59)</td>
<td>(-1.58)</td>
</tr>
</tbody>
</table>

| **N (governors)**           | 195                   | 183                  | 195                   | 183                   |
| **N (spells)**              | 1513                  | 1410                 | 1513                  | 1410                  |
| **Log likelihood**          | -544.2                | -478.4               | -512.9                | -444.7                |
| **AIC**                     | 1092.3                | 976.8                | 1083.9                | 963.4                 |
| **θ (estimated frailty variance)** | 0.329***             | 0.370***             | -                     | -                     |
| McFadden’s R²               | -                     | -                    | 0.076                 | 0.107                 |

Note: Figures are hazard ratios from Cox proportional hazard regressions with shared frailties (Models 1 and 2) or country fixed effects (Models 3 and 4); t-values in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.
Table 3: The impact of party affiliation on governor survival over time

<table>
<thead>
<tr>
<th></th>
<th>Shared frailty models</th>
<th>Fixed effects models</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 5</td>
<td>Model 6</td>
</tr>
<tr>
<td>Affiliation: government</td>
<td>0.0639</td>
<td>0.587</td>
</tr>
<tr>
<td></td>
<td>(-0.99)</td>
<td>(-0.17)</td>
</tr>
<tr>
<td>Affiliation: government × ln(Time)</td>
<td>1.294</td>
<td>0.971</td>
</tr>
<tr>
<td></td>
<td>(-0.73)</td>
<td>(-0.07)</td>
</tr>
<tr>
<td>Affiliation: opposition</td>
<td>73.20*</td>
<td>3533.1***</td>
</tr>
<tr>
<td></td>
<td>(-1.86)</td>
<td>(-3.10)</td>
</tr>
<tr>
<td>Affiliation: opposition × ln(Time)</td>
<td>0.579*</td>
<td>0.348***</td>
</tr>
<tr>
<td></td>
<td>(-1.79)</td>
<td>(-3.02)</td>
</tr>
<tr>
<td>Central Bank Independence</td>
<td>1.346</td>
<td>1.348</td>
</tr>
<tr>
<td></td>
<td>(-1.48)</td>
<td>(-1.47)</td>
</tr>
<tr>
<td>Central Bank Independence × ln(Time)</td>
<td>28.03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.83)</td>
<td></td>
</tr>
<tr>
<td>Election year (t-1)</td>
<td>0.602</td>
<td>0.298*</td>
</tr>
<tr>
<td></td>
<td>(-0.98)</td>
<td>(-1.65)</td>
</tr>
<tr>
<td>Inflation (t-1), logged</td>
<td>1.527**</td>
<td>1.41</td>
</tr>
<tr>
<td></td>
<td>(-2.12)</td>
<td>(-1.55)</td>
</tr>
<tr>
<td>GDP growth (t-1)</td>
<td>0.952**</td>
<td>0.943***</td>
</tr>
<tr>
<td></td>
<td>(-2.09)</td>
<td>(-2.38)</td>
</tr>
<tr>
<td>Unemployment (t-1), logged</td>
<td>1.092</td>
<td>1.027</td>
</tr>
<tr>
<td></td>
<td>(-0.47)</td>
<td>(-0.11)</td>
</tr>
<tr>
<td>Insider</td>
<td>1.194</td>
<td>1.205</td>
</tr>
<tr>
<td></td>
<td>(-0.77)</td>
<td>(-0.71)</td>
</tr>
<tr>
<td>Age</td>
<td>1.024*</td>
<td>1.029*</td>
</tr>
<tr>
<td></td>
<td>(-1.69)</td>
<td>(-1.73)</td>
</tr>
<tr>
<td>N (governors)</td>
<td>195</td>
<td>183</td>
</tr>
<tr>
<td>N (spells)</td>
<td>1513</td>
<td>1410</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-542.0</td>
<td>-473.8</td>
</tr>
<tr>
<td>AIC</td>
<td>1091.9</td>
<td>971.6</td>
</tr>
<tr>
<td>θ (estimated frailty variance)</td>
<td>0.375***</td>
<td>0.524***</td>
</tr>
<tr>
<td>McFadden’s R²</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: Figures are hazard ratios from Cox proportional hazard regressions with shared frailties (Models 1 and 2) or country fixed effects (Models 3 and 4); t-values in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.
Figure 1: Distribution of governors’ survival times
Figure 2: Average tenure by country in days (extended means)

Note: Squares represent extended means, thus taking censored observations into account (see Cleves et al., 2002: 120). Luxembourg and Romania are discarded because they each have only one censored individual in the data set. 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.
Figure 3: Governor ideology by ideology of appointing government

Note: All governors affiliated with communist, socialist, or social democratic parties denoted as ‘left’. Ideology of appointing governments based on an updated version of Woldendorp et al. (2000). Number of appointees by government type in parentheses; 17 observations are dropped due to missing data on government ideology.
Figure 4: Kaplan-Meier survival estimates by affiliation
Figure 5: The impact of party affiliation on governor survival

Note: Survival functions based on Model 2.
Figure 6: The changing impact of opposition affiliation over time

Note: Dashed lines mark 95 percent confidence interval. First 50 days omitted to enable better graphical representation. The standard error for the joint effect ($b_1 + b_2 \cdot \ln(t)$) is given by $(\text{var}(b_1) + (\ln(t))^2 \cdot \text{var}(b_2) + 2 \cdot \ln(t) \cdot \text{cov}(b_1, b_2))^{1/2}$. The formula for the 95 percent confidence interval is $(b_1 + b_2 \cdot \ln(t)) \pm 1.96 \cdot \text{SE}(b_1 + b_2 \cdot \ln(t))$ (Golub & Steunenberg 2007).