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 'responsive' central bank officials and removing 'hostile' ones. 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.

Keywords: central bank governors, party affiliation, central bank independence, political appointments

Introduction

In Western democracies, central banks are arguably the most independent state institutions apart from the judiciary. This high degree of formal autonomy severely constrains the influence that elected officials have over monetary policy. Central bank independence (CBI) functions as an institutional commitment device that enables governments to defy the expectation that monetary policy will follow electoral or partisan incentives. It is thus an important economic policy tool in the pursuit of price stability (for recent overviews of the literature on CBI, see e.g. Berger et al. 2001; Cukierman 2008; Klomp & de Haan 2010b).

However, politicians who are nonetheless seeking to influence monetary policy may choose to undermine central bank independence by filling lead positions at central banks with individuals that are favorably predisposed towards the policies put forward by the government. By the same logic, central bankers who are hostile towards the government may be removed. The present analysis examines to what extent these patterns are observable in post-war Europe. 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 collects data on the partisan background of 195 central bank governors in 30 European countries between 1945 and 2012 to test whether partisan congruence between governors and the executive (the government or the president) is associated with a higher probability of governor turnover.

In studying the political determinants of the survival of central bank governors, this piece of research sheds light on the non-legal aspects of central bank independence and thus complements our understanding of the role of politics in monetary policy. Hitherto, much attention has been devoted to the formal aspects of CBI (Cukierman 1992; Cukierman et al. 1992; Alesina & Summers 1993; Cukierman & Webb 1995). Only more recently have researchers started to focus on the professional and political background of the people appointed as monetary policy makers. As shown by a number of studies, biographical information on individual central bankers can help explain substantial amounts of variation in central bank decision-making and macroeconomic outcomes (Göhlmann & Vaubel 2007; Vuletin & Zhu 2011; Adolph 2013; Neuenkirch & Neumeier 2013). The present article contributes to this line of research by providing the most detailed account to date of the impact of partisan ties on governor survival in Europe.

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. It argues that, due to central banks being formally independent, politicians

may resort to the appointment channel as a way to influence monetary policy. This should become observable as a correlation between a governor's partisan congruence with the executive and his or her survival in office. Next, the empirical strategy is outlined and a descriptive account of the data presented. The analysis then employs event history models to gauge the effect of party affiliation on the survival of central bank governors. It finds that partisan ties to the government strongly increase a governor's odds of survival vis-à-vis nonpartisan and opposition-affiliated individuals. Further examination reveals that the effect of opposition affiliation is time-dependent. 'Hostile' governors face larger odds of removal early in their term, but this effect vanishes after less than four years.

Theoretical framework

Politicians care about macroeconomic outcomes, either because they are intrinsically motivated to pursue a certain policy course of action, or because a country's economic performance strongly influences their re-election prospects. While the genuine motivation to produce certain economic outcomes will become observable across time as partisan business cycles, the opportunistic timing of spending increases or tax cuts should result in electoral cycles (for an overview of this literature, see Franzese 2002). In both cases, elected officials have strong incentives to exert some form of control over monetary policy, e.g. to strategically time an increase in economic output or to aim at a specific long-term level of inflation. With central banks enjoying high levels of legal independence, the most promising way to wield influence is to appoint 'responsive' individuals as governors and remove those appointees that may be at odds with the government's policy course of action.

One way to think about the responsiveness of appointees to politicians is provided by principal-agent theory. 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 (Epstein & O'Halloran 1999; Bendor et al. 2001; Bendor & Meirowitz 2004; Huber & Shipan 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. Surely, one of the most valid information shortcuts with respect to a person's ideological views is his or her partisan orientation. While nominees for high positions in central banks will usually be scrutinized extensively, party labels still provide crucial information about an individual's views that may otherwise go unobserved.

It should be noted that, while partisan congruence typically entails ideological convergence, the argument made here does not necessarily hinge on the presence of an ideological dimension. There are plausible alternatives to ideological congruence as mechanisms of responsiveness. What is more, governments seeking to produce electoral cycles may at times try to persuade partisan central bankers to act against their ideological convictions (e.g. if conservative governors are nudged to stimulate output ahead of elections and thus risk increasing inflation).

Rather than strictly requiring ideological congruence, responsiveness simply implies that appointees take the interests of their co-partisans in government into account when making decisions on monetary policy. Individuals who have been socialized into political parties and possibly even owe their career to their party are more likely to factor in the preferences of their co-partisans when setting interest rates or regulating the money supply. Also, shared partisan socialization between governments and central bankers keeps channels of communication open, facilitates the exchange of information, and makes it easier to coordinate fiscal and monetary policy.

In addition, central bank governors with party ties may assume that their appointment is, at least in part, due to their partisan background. As a consequence, they may calculate that their survival in office does not merely hinge on their technocratic expertise or macroeconomic performance, but also on their responsiveness to the government's preferences.

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 (Meyer-Sahling 2006; Lewis 2008; Boyne et al. 2010; Ennser-Jedenastik 2013), even if this turns out to be harmful in terms of bureaucratic performance (Lewis 2007; Gallo & Lewis 2012).

More importantly, however, there is ample evidence that appointments to monetary policy institutions matter, as scholarly attention has increasingly been devoted to the examination of career patterns of 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 & Webb 1995; Oatley 1999; Sturm & de Haan 2001; Keefer & Stasavage 2003). Note, however, that there are serious theoretical and empirical problems with using governor turnover as a proxy for CBI (Adolph 2013: 288-90).

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 & 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 monetary policy committees dominated by former central bank staff produce considerably lower inflation than those dominated by former politicians and union leaders. Vuletin and Zhu (2011) find that the removal of central bank governors only causes inflation when they are replaced with individuals drawn from the government sector (former politicians and bureaucrats). Neuenkirch and Neumeier (2013) show that, irrespective of political ideology, monetary policy makers with partisan ties are considerably more dovish in their interest-rate setting behavior. Furthermore, they find that partisans respond to changes in output much more than to changes in price levels.

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 only developed 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 a positive

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 & 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 partisan composition of governments.

Based on the discussion above and the empirical evidence gathered by students of central bank politics, the gist of the argument presented here 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 fill lead positions in central banks with people who are inclined to take the government's interests into consideration and remove those that are viewed as potentially hostile. Since the degree of responsiveness to governmental concerns is 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 a party in the executive will have longer tenures whereas those affiliated with the opposition will be removed more quickly.

Empirical strategy and data description

To test this prediction, the empirical part of this article 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.

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 Economic and 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 members of the ECB Governing Council.

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 of only six governors of which some may, in fact, be party members whose 'true' degree of affiliation is inaccurately observed. Treating these six cases as nonpartisans does not alter any of the conclusions below. In total, no less than 83 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. A table in the online appendix reports the number of partisan appointees per country.

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 in so doing even risks severe conflict with other branches of government (e.g. the Czech Republic).[1]

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

[1] 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.

exerts more than formal powers in the appointment of the governor (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.[2] 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 Laver & Shepsle 1996; Andeweg 2000). 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.

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 to 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').[3] 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.

[2] 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.

[3] 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.

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.[4] Unemployment time series were taken from the European Commission's annual macro-economic database (AMECO), and with additional data coming from the ILO as recorded by Mitchell (2003).[5] The analysis also includes Cukierman's index of central bank independence (Cukierman 1992; Cukierman & Webb 1995; Cukierman et al. 2002), which 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 (Cleves et al. 2002; Box-Steffensmeier & Jones 2004). These models have been widely applied in analyzing the survival of a large range of office holders, from governments (Diermeier & Stevenson 1999; 2000; Laver 2003) and individual ministers (Huber & Martinez-Gallardo 2008) to appointed bureaucrats (Wood & 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

[4] See www.conference-board.org/data/economydatabase and www.ggdc.net/maddison, respectively.
[5] 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.

following reasons: (1) death, (2) illness, (3) promotion to a higher office,[6] (4) reaching the legal age limit, (5) reaching the maximum number of terms allowed.[7]

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.

FIGURE 1 ABOUT HERE

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.[8] 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 shared frailty parameters and fixed effects.

FIGURE 2 ABOUT HERE

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.

[6] 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.
[7] 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.
[8] 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).

TABLE 1 ABOUT HERE

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 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 substantial bias towards appointing conservative central bank governors.[9]

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 appears to lead to below-average tenure lengths.[10] 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 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

[9] 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.
[10] 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'.

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 & 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

$$h_{ij}(t) = h_0(t)\, \alpha_i\, exp(x_{ij}\beta_x)$$

where $h_0(t)$ is the (unspecified) baseline hazard, α represents the country-level frailty, x is a set of covariates, and β is a vector of regression coefficients.[11]

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 & 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 executive 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

[11] More specifically, α is a parameter assumed to have a mean of 1 and a variance of θ. If θ 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 & Stare 2002: 3231).

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.[12] Although the data do not allow for a perfect distinction between ideology and partisanship as drivers of turnover, this may suggest that ideological congruence is, in fact, less relevant than the other types of linkage that party affiliation provides, for instance, easier exchange of information or better coordination of monetary and fiscal policy. Holding similar policy views may thus be less important for a governor to survive longer than having informal ties based on partisanship.

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 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 as reported by Dreher et al. (2008; 2010). This may be due to differences in spatial and temporal coverage as well as different econometric models being applied.

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

[12] These results are robust to several alternative specifications, such as a jackknife analysis that omits one country at a time or running separate models for Western Europe and Central and Eastern Europe (see appendix).

hazard ratio greater than 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 one, thus indicating that there is no statistically significant effect. Unemployment is therefore not related to governor turnover. This result remains unchanged in all models when removing GDP from the equation.

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 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.[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.[16]

[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 a jackknife analysis that leaves out one country at a time. Only when omitting Lithuania from the sample do their p-values slip below the 10 percent threshold.
[15] The appendix elaborates on the changing effect of CBI over time according to Model 4 in more detail.
[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

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; Golub & Steunenberg 2007; Licht 2011).

TABLE 3 ABOUT HERE

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.

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 × ln(time) with 95 percent confidence intervals.

FIGURE 6 ABOUT HERE

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.

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.[17] 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.

The data thus suggest that, as time passes, '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. When governors survive long enough to demonstrate their competence (or, in fact, 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 responsive governors and the removal of 'hostile' ones becomes the main source of influence that elected officials can exert over monetary policy. In order to obtain information about the potential responsiveness of a governor, party affiliation is one of the most readily available and reliable indicators.

[17] 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.

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 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. It also deepens our understanding of the informal channels of influence that politicians can use to gain leverage over macroeconomic outcomes.

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 (Fry 1998; de Haan & Kooi 2000; Jácome & Vázquez 2008). 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 responsiveness to government politicians. In the absence of coherent and persistent political parties, other informal linkage mechanisms may be employed.

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Table 1: Descriptive statistics of the independent variables:

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

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(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 2: The impact of party affiliation on the survival of governors

	Shared frailty models		Fixed effects models	
	Model 1	Model 2	Model 3	Model 4
Affiliation: government	0.488***	0.513**	0.420***	0.428***
	(-2.80)	(-2.40)	(-3.11)	(-2.72)
Affiliation: opposition	1.176	1.212	0.995	1.052
	(-0.67)	(-0.73)	(-0.02)	(-0.17)
Election year (t-1)		1.326		1.308
		(-1.41)		(-1.32)
Inflation (t-1), logged		1.516**		1.367
		(-2.18)		(-1.44)
GDP growth (t-1)		0.953**		0.945**
		(-2.04)		(-2.27)
Unemployment (t-1), logged		1.067		0.994
		(-0.36)		(-0.02)
Central Bank Independence		21.39		17395.3*
		(-0.80)		(-1.67)
Central Bank Independence × ln(Time)		0.641		0.225*
		(-0.90)		(-1.93)
Insider		1.172		1.176
		(-0.70)		(-0.62)
Age		1.022		1.026
		(-1.59)		(-1.58)
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 R^2	-	-	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

	Shared frailty models		Fixed effects models	
	Model 5	Model 6	Model 7	Model 8
Affiliation: government	0.0639	0.587	0.312	6.601
	(-0.99)	(-0.17)	(-0.42)	(-0.58)
Affiliation: government × ln(Time)	1.294	0.971	1.033	0.692
	(-0.73)	(-0.07)	(-0.09)	(-0.88)
Affiliation: opposition	73.20*	3533.1***	597.1***	44275.6***
	(-1.86)	(-3.10)	(-2.73)	(-3.84)
Affiliation: opposition × ln(Time)	0.579*	0.348***	0.429***	0.246***
	(-1.79)	(-3.02)	(-2.72)	(-3.82)
Central Bank Independence		1.346		1.348
		(-1.48)		(-1.47)
Central Bank Independence × ln(Time)		28.03		1969.8
		(-0.83)		(-1.36)
Election year (t-1)		0.602		0.298*
		(-0.98)		(-1.65)
Inflation (t-1), logged		1.527**		1.41
		(-2.12)		(-1.55)
GDP growth (t-1)		0.952**		0.943**
		(-2.09)		(-2.38)
Unemployment (t-1), logged		1.092		1.027
		(-0.47)		(-0.11)
Insider		1.194		1.205
		(-0.77)		(-0.71)
Age		1.024*		1.029*
		(-1.69)		(-1.73)
N (governors)	195	183	195	183
N (spells)	1513	1410	1513	1410
Log likelihood	-542.0	-473.8	-509.2	-437.5
AIC	1091.9	971.6	1080.3	953.0
θ (estimated frailty variance)	0.375***	0.524***	-	-
McFadden's R^2	-	-	0.082	0.121

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

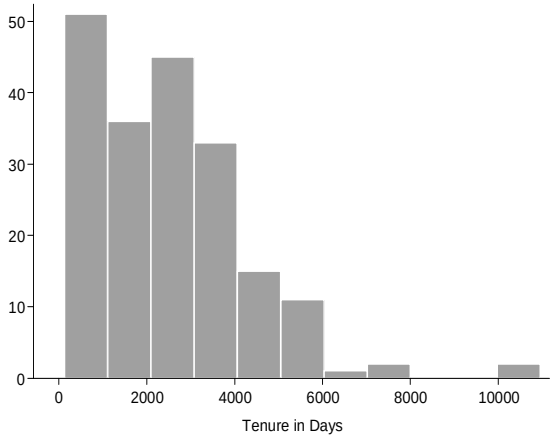
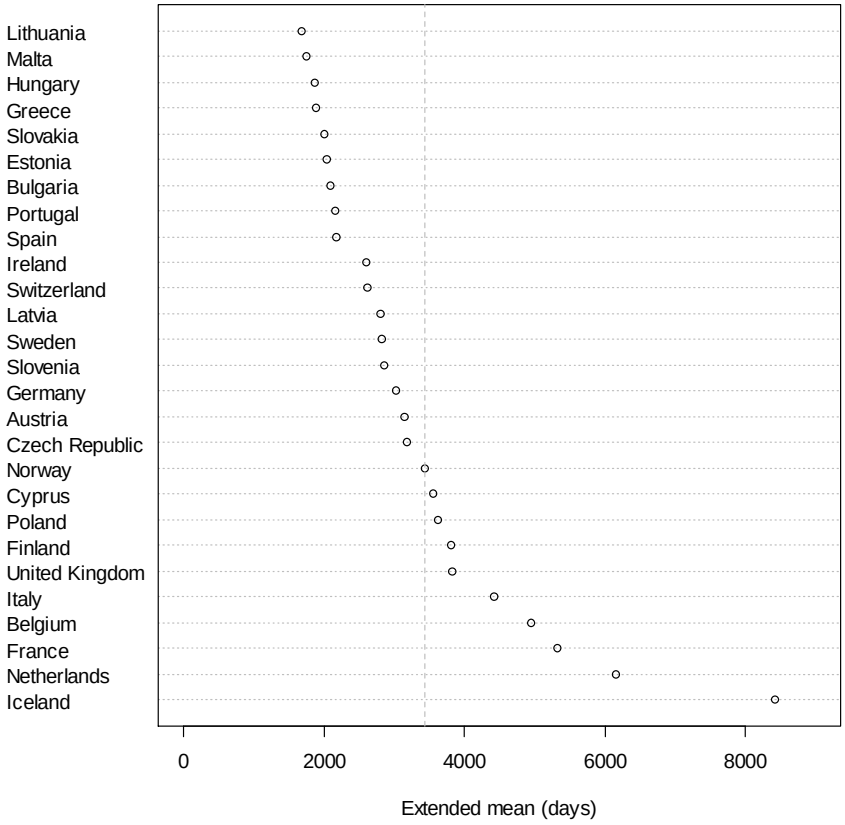
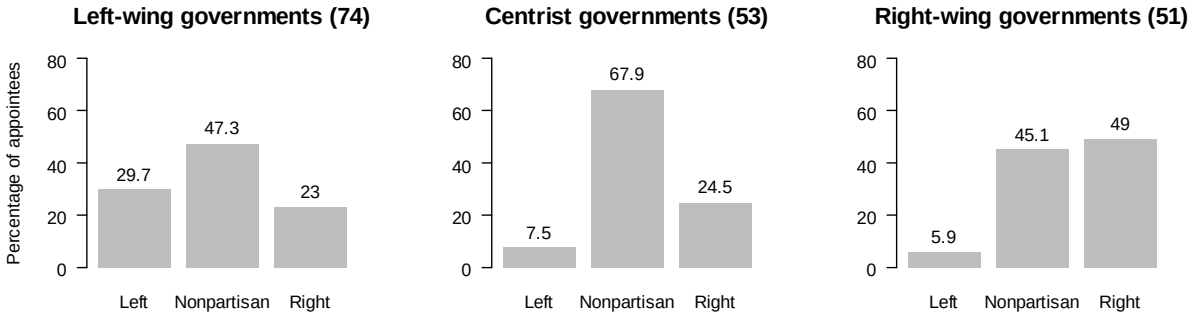


Figure 2: Average tenure by country in days (extended means)



Note: Circles 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: Data refer to first appointments only, re-appointments are discarded here. 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

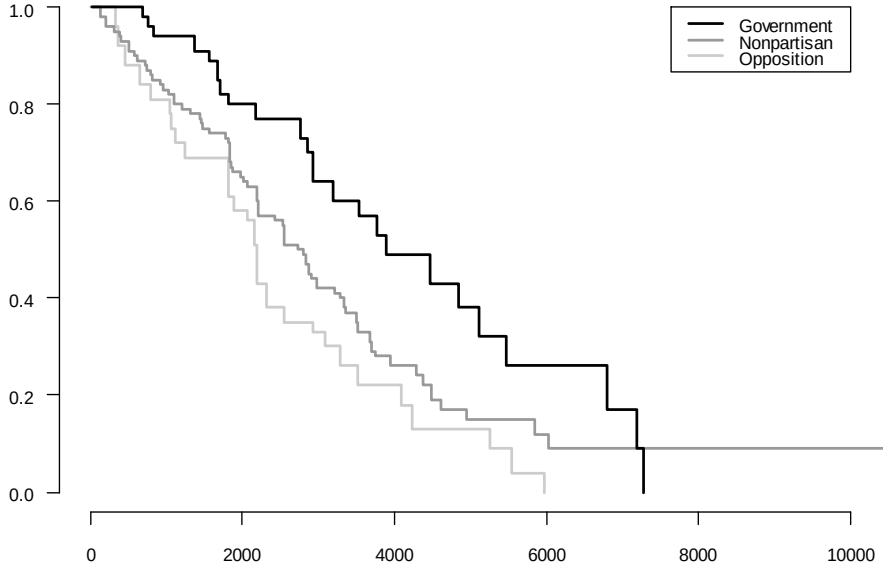
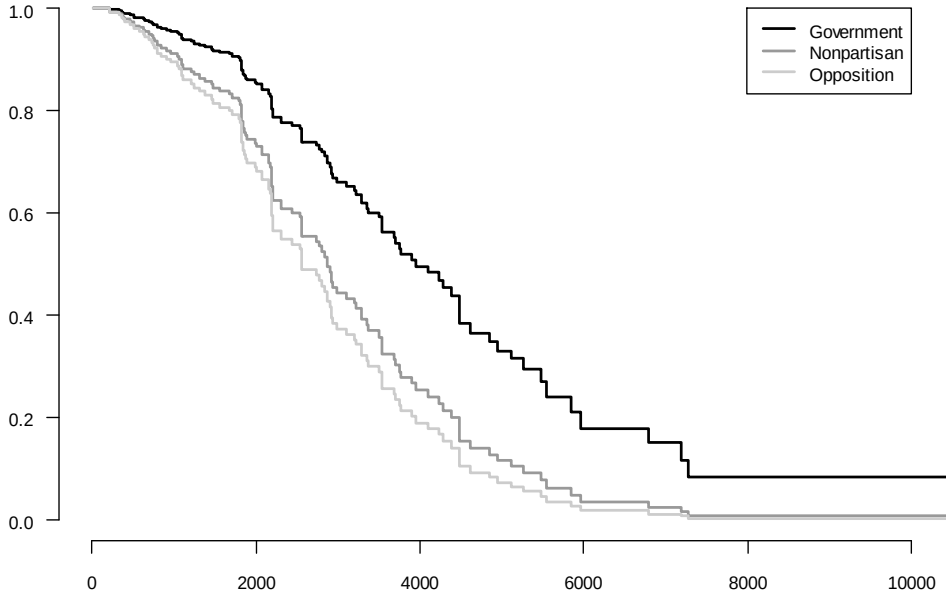
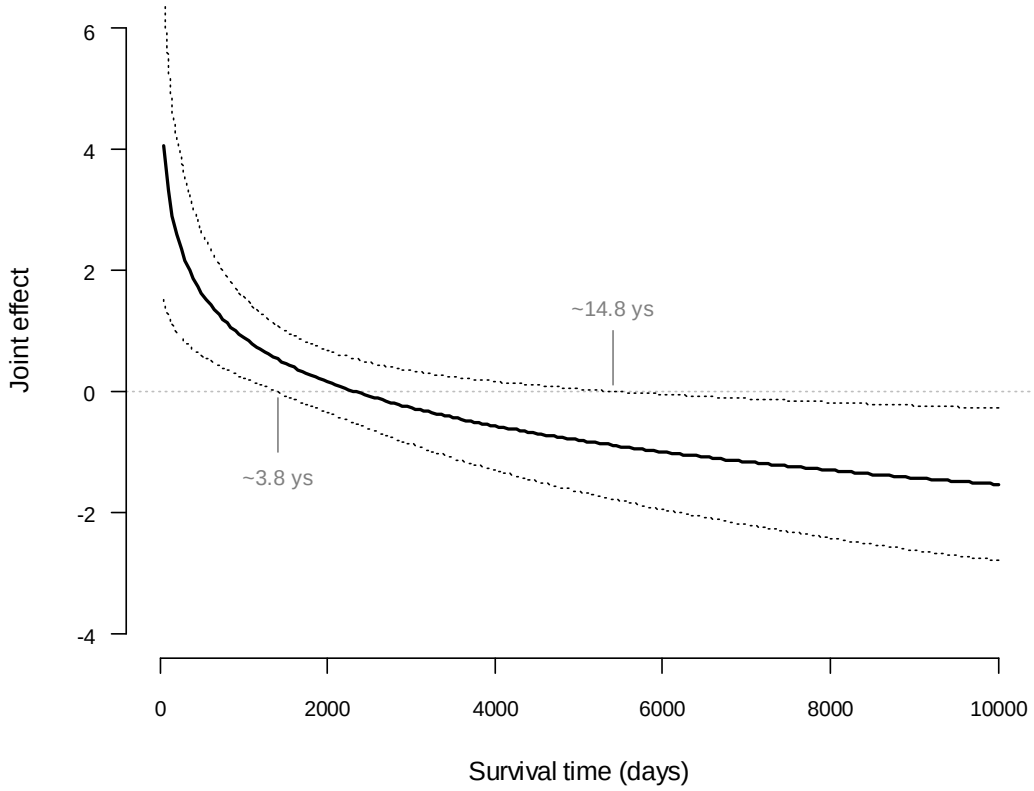


Figure 5: The impact of party affiliation on governor survival



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 $(b_1+b_2*ln(t))$ is given by $(var(b_1) + (ln(t))^2 var(b_2) + 2*ln(t)*cov(b_1, b_2))^{1/2}$. The formula for the 95 percent confidence interval is $(b_1 + b_2*ln(t)) \pm 1.96*SE(b_1 + b_2*ln(t))$ (Golub & Steunenberg 2007).