CESifo Economic Studies, 2020, 1–31
doi: 10.1093/cesifo/ifaa013
Review

OXFORD

The Central Bank Governor and Interest Rate Setting by Committee

Emile van Ommeren* and Giulia Piccillo †

*Department of Political Science, University of Antwerp, Belgium, Antwerp, Belgium. E-mail: emile.vanommeren@uantwerpen.be and †School of Business and Economics, Maastricht University, Maastricht, Netherlands. E-mail: g.piccillo@maastrichtuniversity.nl

Abstract

This article studies the role of central bank governors in monetary policy decisions taken by a committee. To carry out this analysis, we constructed a novel dataset of committee voting behaviour for six OECD countries for up to three decades. Using a range of Taylor rule specifications, we show that a change in governor significantly affects interest rate setting. We also observe systematic differences in interest rate rules based on the political party appointing the governor, with more inflation-averse policies under governors that are appointed by a right-wing political authority. We show the robustness of this result by using a wider dataset (including over 3000 observations from 12 countries). (JEL codes: E02, E5, P16)

Key words: monetary policy, Taylor rule, central bank governors

1. Introduction

The movement towards monetary policy decision-making by committee rather than by individuals is probably one of the most impactful changes to monetary policy institutions in the last half-century. Blinder (2004) refers to this worldwide trend in central banking as 'the quiet revolution'. Among the countries that have opted to establish monetary policy committees (MPCs) are Japan, the UK, Sweden, the Czech Republic, and Hungary. In the USA, the Federal Open Market Committee (FOMC) oversees the nation's open market operations since the Banking Act of 1933. These committees consist of a small number of individuals who decide on the level of interest rates by majority voting, with varying degrees of transparency (Blinder 2007). Minutes and press releases provide an outline of the discussions in the committee, and the attributed voting records are also public.

There is substantial literature that uses information from transcripts, minutes or voting records to study the committees' policymaking process (for example, Bhattacharjee and Holly 2006; Horváth et al. 2012; Riboni and Ruge-Murcia 2014). The bulk of this literature focuses on the preferences of committee members and the impact on interest rate setting, often by estimating individual reaction functions. A related strand of papers deals with the effect of partisan and electoral considerations on voting behaviour, in which the

appointment procedure of committee members plays a central role (for example, McGregor 1996; Belke and Potrafke 2012; Cahan et al. 2019; Giesenow and de Haan 2019). These studies shed light on de jure and de facto central bank independence (CBI).

Still others describe how the leadership of the governor might affect monetary policy outcomes (for example, Chappell et al. 2014). The best-known case of a chairman[1] with tangible influence on the interest decision is probably Alan Greenspan (AG), who chaired the FOMC for over 18 years. According to Blinder (2007, p. 111), former vice-chairman of the Federal Reserve System, FOMC members had only one real choice: 'to go on record as supporting or opposing the chairman's recommendation, which was certain to prevail'. Evidence from simulation models on decision-making in committees suggests that chairman dominance may also be prevalent in other MPCs (see, for example, Gerlach-Kristen 2008; Claussen et al. 2012).

Our study has two main purposes. The first one is to examine whether the chair has a significant impact on interest rate setting based on monetary policy functions. The second one is to examine whether the appointment of a chair by a particular political party can predict systematic differences in monetary policy, even extending to when the appointing party is no longer in power.

Using voting records of six central banks (the Czech Republic, Hungary, Japan, Sweden, the UK, and the USA) and linear (augmented) Taylor rules, this article explores the chair's position and his role in the conduct of monetary policy. We then use the Database of Political Institutions (DPI) to identify the party affiliation and ideology of the government official(s) involved in the appointment process. In this second part of the article we do not need voting records, hence extend our database to include other six countries [Canada, Denmark, Israel, Korea (rep.), Mexico, and Norway].

The main results show that the replacement of a chair often leads to a change in the monetary policy reaction function. This implies that the chair plays a strong role in the decisions made by the committee. In addition, we provide evidence of a partisan effect on interest rate setting through the political appointment of the governor. Monetary policy appears to be more hawkish under governors that are appointed by a right-wing political authority.

These findings suggest that important challenges remain after decades of central bank reform. Although there is a general consensus on the advantages of interest rate setting by committee, central banks (and accordingly, countries) should include in their decision process the fact that the governor will likely exert a disproportionate influence on monetary policy decisions. The same holds for CBI. When governors are subject to short-term political pressures through the appointment channel, then this could affect the banks' credibility and price stability in the longer run.

The remainder of this article is organized as follows. Section 2 undertakes a survey of the literature on the role of the chair in interest rate setting. We then provide information on the dataset we use and describe the institutional background of MPCs in Section 3. Section 4 presents the model and estimation of the Taylor rules under different governors. We then proceed to show empirical evidence on the potential influence of political appointments and ideologies on monetary policy in Section 5. Section 6 concludes.

1 We use the terms 'governor', 'chair', and 'chairman' interchangeably, referring to the person chosen to preside over the meetings of a particular MPC.

2. MPCs: A Survey of Current Literature

This section provides a brief review of the literature on the position of the chair in MPCs and the role of the appointment procedure. These contributions add context and motivation to the analysis presented in this article.

2.1 The position of the chair

The idea behind decision-making by committee is that the quality of monetary policy improves by pooling members' information and knowledge. A theoretical study by Gerlach-Kristen (2006) shows that committees achieve better policy outcomes than individuals in the presence of uncertainty about the state of the economy. In addition, Blinder and Morgan (2005), in an experimental laboratory environment, find that groups reach decisions as fast as or even faster than individuals. Claussen et al. (2012) point out that an MPC with decision power can also be seen as an insurance mechanism against extreme actions from a single policymaker. Overall, economic theory and modelling are quite clear on the advantages of monetary policy decision-making by committee.

However, Blinder (2007) notes that the distinction between individual and group decision-making can be vague in practice. In earlier work, Blinder (2004) offers a typology of MPCs, where he distinguishes between three types of decision-making: individualistic, genuinely collegial, and autocratically collegial. First, in an individualistic committee, members express their opinions in the policy debate and also vote according to their views. The committee's decision is made by literal majority vote, which means that unanimity is not necessarily expected (Blinder 2007). This implies that the chair's views have no extra weight (Gerlach-Kristen 2008). Second, internal procedures of a genuinely collegial committee may be similar to individualistic committees, but they ultimately compromise on a group decision. The chair gets the most public attention, because he or she communicates the committee's view to the public (Gerlach-Kristen 2008). Third, Blinder (2004, p. 58) characterizes an autocratically collegial committee as an MPC where 'the chairman's going-in position is the likely consensus, and he either persuades or browbeats the others into agreement'. As stated by Blinder (2004), the FOMC is such a committee, in which the decision-making process is highly formal and very much controlled by the chair. Because the committee still has the possibility to block the proposal if it deviates too much from the majority's view, they still may have influenced the decision (Blinder 2007).

More specifically, Gerlach-Kristen (2008) argues that 'economic' and 'moderating' abilities of the chair may lead to a disproportionate influence on the interest rate setting. The former refers to the chair's expertise on the monetary policy area, the latter to his talent for shaping the outcome by guiding the discussion. Gerlach-Kristen (2008) also finds that in some cases simply the authority arising from the chair's position affects the distribution of votes.

In addition, a certain tolerance towards the chair's view is often assumed because outvoting the chair can entail considerable costs. According to Claussen et al. (2012), the public may interpret this as a lack of trust in the chair, which can possibly weaken the credibility of the central bank. Besides, voting down the chair may hurt the collegial spirit and it could undermine the chair's position as a facilitator for (unanimous) decisions. Therefore, committee members might have a tendency to go along with the chair despite of having different views on the optimal interest rate. An extra layer of decision power can emerge from the chair's agenda-setting right. A chair with agenda-setting rights, which is

common to the FOMC and the Bank of Japan, proposes a policy action that other members must vote for or against. This way, the chair can approach his optimal interest rate after the policy discussion, conditional on the other members' tolerance intervals (Gerlach-Kristen 2008).

For this reason, the position of the chair relative to the other committee members should also be taken into account. Eijffinger et al. (2013) infer individual policy preferences of committee members based on voting records and place them on a dove-hawk scale. All other things equal, doves prefer lower interest rates on average than hawkish members. They show that the chair (internal) of the Hungarian National Bank is always on the hawkish side of the board, while the majority lies at the more dovish externals. For Sweden they find that Governor Ingves is significantly more hawkish than his predecessors Heikensten and Backström. As claimed further by Eijffinger et al. (2013), the Czech central bank's chairman Singer is more dovish relative to chairman Tuma. In a subsequent paper, Eijffinger et al. (2015) reveal similar (centrist) positions for Greenspan and Bernanke in the FOMC board. In contrast, Yellen is identified as the most dovish chair since 1958 (Wilson 2014). Finally, Eijffinger et al. (2018) state that King, at the MPC of the Bank of England, preferred tighter policies than Governor Carney. Such a categorization for the Bank of Japan is not available in the existing literature.

A hawkish reputation can be valuable to a central bank due to a lower expected inflation and, therefore, higher future expected welfare (Sibert 2003). Hence, Sibert (2003) states that central bankers might have an incentive to establish this reputation early in their tenure. Neuenkirch (2015) tested this proposition in a study on 15 OECD countries and 50 changes in central bank head's office and finds that governors fight inflation more aggressively during the first four to eight quarters of their time in office. Also, monetary policy is more proactive in the beginning of a chair's tenure, which supports the idea of reputation building (Neuenkirch 2015).

2.2 Governor appointments

Based on the literature on the chair's dominance and the differences in preferences, one might expect changes in the conduct of monetary policy when a new governor is appointed. Some studies on financial markets show that bond yields, exchange rates, and stock prices react to governor replacements, which also suggests that it matters who the governor of the central bank is (see, for example, Kuttner and Posen 2010; Moser and Dreher 2010). But when is a governor replaced? An obvious moment is after the expiration of a chair's term of office. However, Vuletin and Zhu (2011) find that in advanced economies about 58% of the central bank governor exits are irregular. Only half of these early departures occurred during the first term. Many of the irregular exits after the first term took place in Sweden and in other Scandinavian countries. Furthermore, the average turnover ratios in the Czech Republic, Hungary, and Japan are considerably higher than in the UK and the USA. Moreover, Dreher et al. (2010) demonstrate that the likelihood that a central bank governor will be replaced increases with a new government and with upcoming elections.

In line with this result, Vuletin and Zhu (2011) show that a premature exit of a chair is often associated with the replacement of an 'ally' (a high official) of the government. Adolph (2013) reports that changes in the partisan composition of governments have an effect on tenures of central bank' governors. Ennser-Jedenastik (2014), in a study conducted over 195 central bank governors in 30 European countries, establishes that affiliation with

the government makes a chair almost twice as likely to remain in office in a given period of time. He further notes that even in the absence of formal removal authority, political pressures can cause governors to resign before the end of their term. Criticizing a chair publicly, for instance, can undermine the credibility of the central bank, forcing the governor to step down (Ennser-Jedenastik 2014). Instead of premature replacement of a chair, politicians can also choose not to reappoint the sitting governor. After his term expires, the authorities can nominate someone who is favourably predisposed towards the policies put forward by the government (Ennser-Jedenastik 2014).

These studies illustrate how the appointment process can be a mechanism through which party ideologies might play a role in central bank decision-making. As stated by Göhlmann and Vaubel (2007), nominated central bankers feel loyal to the party that has appointed them. According to Belke and Potrafke (2012), it is, therefore, possible that governors attempt to manipulate the economy to increase the election prospects of their party. Some evidence that committee members follow a specific party line is provided by Chappell et al. (1993), who find that Democratic Party appointees vote significantly different from Republican Party appointees in the FOMC. Tootell (1996) also finds that partisan affiliation seems to affect FOMC voting, and notes that 'politics do, and should, play a role' (p. 204) because the democratic process shapes the central bank's long-run goals. More specifically, left-wing parties should place more emphasis on growth, while right-wing politicians tend to be relatively inflation averse (that is, hawkish) (Chappell et al. 1993; Ehrmann and Fratzscher 2011).

Nonetheless, empirical studies on partisan tendencies in interest setting behaviour are scarce and investigations for the USA and Germany dominate (Belke and Potrafke 2012). For the Bundesbank, Berger and Woitek (2005) show that the more conservative members react stronger to changes in inflation and output. Sakamoto (2008) analyses panel data for 18 OECD countries and finds that central banks under leftist governments carried out looser monetary policy. Contrarily, results from a study by Clark (2003) suggest that central banks under left-labour power are associated with higher interest rates. Belke and Potrafke (2012) add an institutional dimension and conclude that interest rates under leftist governments are somewhat lower than under right-wing governments when CBI is low. However, they find opposite results in case of high CBI in a country. Giesenow and de Haan (2019) do not find evidence that central banks follow preferences that are in line with the ideological preferences of the government, while Cahan et al. (2019) find that monetary policy was only associated with government ideology when central banks followed governments' directives and when exchange rates were flexible. Thus, studies on partisan monetary policy have provided mixed evidence when it comes to interest rate setting.

In these papers, political affiliation of central bankers (like party membership) or the difference in interest rates between incumbent governments is used as the foundation of partisan monetary policy analysis. Interestingly, none of these studies has examined whether the left-wing or right-wing appointment of a chair has an impact on interest rates during his or her tenure. Therefore, this study not only examines if the conduct of monetary policy is affected by changes in the chair, but also whether political appointments are driving these potential differences. To date, scholars have dealt with differences in the chairs' preferences and political involvement in the appointment procedure as two separate phenomena. This study takes a first step to integrate these two strands of literature.

3. Description of the Dataset and Institutional Setting

The sample consists of six OECD countries: the Czech Republic, Hungary, Japan, Sweden, the UK, and the USA. These are the only central banks that publish voting records for a sufficiently long time.

The establishment of MPCs in the last two decades went closely together with the spread of CBI (Blinder 2007). Almost all MPCs are operationally independent from the government and they have the responsibility for the conduct of monetary policy. MPCs meet on a regular and pre-announced basis, but the frequency of policy meetings varies. The FOMC, the Sweden's Riksbank, the Bank of Japan, and the Czech National Bank meet approximately eight times a year, whereas the MPCs of the Bank of England and the Hungarian National Bank meet monthly. On occasions, for example, during crisis periods, the central banks organize extraordinary policy meetings.

The number of committee members ranges between 6 and 13. The smallest MPCs are located in Sweden and the Czech Republic, with six and seven board members, respectively. The medium-sized MPCs of Japan and the UK consist of nine members. In the USA, the Federal Reserve Act requires all of the monetary policymakers to have some regional identity. As a result, the FOMC consists of seven members of the Board of Governors, the president of the Federal Reserve Bank of New York, as well as four presidents of the remaining district banks, chosen according to an annual rotation scheme. The Hungarian central bank was composed of 13 voting members in 2005. However, institutional changes decreased the number of voting members to nine today.

Decisions are based on a majority vote and the chair has the casting vote in the event of a tie. The decision is released in a statement on the same day and the minutes generally follow 1 or 2 weeks later. These minutes and attributed voting records show that dissent is common in MPCs (Riboni and Ruge-Murcia 2014). Table 1 indicates that the frequency of dissenting differs across countries, but also across different governors. For example, 73% of the decisions under AG where reached by unanimity, while only 38% of the decisions where unanimous under Ben Bernanke (BB) as FOMC chairman.

Even though dissents occur frequently, it is remarkable that the governor is almost never on the losing side of the vote (see Table 2). There are some notable differences across

Table 1. Unanimous and majority decisions under different governors

	Sweden (1999–2019)			Hungary (2005–2019)			Czech Republic (1998–2019)				
	UB	LH	SI	ZJ	AS	GM	PK	JT	ZT	MS	JR
U	28	17	49	10	12	64	7	19	53	33	17
M	18	6	39	7	62	18	0	13	54	15	12
T	46	23	88	17	74	82	7	32	107	48	29
	USA (1992–2019)				UK (1998–2019)			Japan (1998–2019)				
	AG	BB	JY	JP	EG	MK	MC	YM	MH	TF	MS	HK
U	84	25	17	12	23	64	42	4	25	47	76	22
M	31	41	15	3	44	56	23	0	64	28	1	49
T	115	66	32	15	67	120	65	4	89	75	77	71

Notes: U, unanimous decisions; M, majority decisions; T, total number of decisions. The initials represent the incumbent chair., *Source:* Central bank websites.

Table 2. Voting statistics for chairs' and other committee members

	Sweden (1999–2019)		Hungary (2005–2019)		Czech Republic (1998–2019)	
	C	M	C	M	C	M
W	152 (99.3%)	668 (87.3%)	145 (90.1%)	1194 (86.5%)	205 (95.8%)	1032 (85.6%)
L	1 (0.7%)	97 (12.7%)	16 (9.9%)	187 (13.5%)	9 (4.2%)	173 (14.4%)
T	153	765	161	1381	214	1205
	USA (1992–2019)		UK (1998–2019)		Japan (1998–2019)	
	C	M	C	M	C	M
W	228 (100%)	2076 (94.6%)	250 (99.2%)	1775 (88.9%)	314 (100%)	2212 (91.0%)
L	0 (0%)	119 (5.4%)	2 (0.8%)	221 (11.1%)	0 (0%)	219 (9.0%)
T	228	2195	252	1996	315	2431

Notes: C, chair; M, other committee members; W, winning side; L, losing side; T, total number of votes., *Source:* Central bank websites.

Table 3. Overview of the sample (OLS)[a]

Central bank	Sample period	Chairs
Czech National Bank	December 2000–December 2019	Tuma–Singer–Rusnok
Hungarian National Bank	March 2001–December 2019	Járai–Simor–Matolcsy
Bank of Japan	April 2003–February 2016	Fukui–Shirakawa–Kuroda
Sweden's Riksbank	January 1994–January 2015	Bäckström–Heikenstein–Ingves
Bank of England	July 1993–December 2019	George–King–Carney
Federal Reserve System	January 1992–January 2018	Greenspan–Bernanke–Yellen

[a]Periods in which the short-term interest rate is negative are excluded from the sample.

countries. For instance, the governors of the Hungarian National Bank and the Czech National Bank are outvoted more often than governors at other central banks. On the other side of the spectrum, the governors of the FOMC and the Bank of Japan were always in the winning coalition. In Sweden and the UK, the chair's views also have a strong tendency to prevail.

Scholars have paid special attention to appointment procedures in explaining voting behaviour in policy committees. Due to a substantial degree of legal independence from elected politicians, the appointment of central bankers becomes a main source of influence for the government on monetary policy (Ennser-Jedenastik 2014). In all countries except from Sweden, the chair is directly appointed by a political authority. In the case of the FOMC and the Czech National Bank, the President nominates the chair of the central bank. The Chancellor of the Exchequer appoints the governor of the Bank of England. The prime minister nominates the chair of the central bank in Japan and Hungary. In Sweden, central bank governors are appointed by the General Council of the Riksbank. Since the members of this council are selected by the parliament after each general election, political involvement in the appointment procedure of the Riksbank's chair can also not be ruled out.

4. Monetary Policy Functions under Different Governors

The conduct of monetary policy is often described by means of Taylor rules. In this section, we specify and estimate Taylor rules in the traditional forms (Taylor 1993), and forward-looking versions (Clarida et al. 1998) for the six central banks.

4.1 The backward-looking Taylor rule

The assumption that central banks have a target for the nominal short-term interest rate, i_t*, that is based on the state of the economy, is essential to all monetary policy functions. In academic research, the Taylor rule has been used on an ex-post basis to assess the weights on inflation and output for many central banks and time periods. 'The rule', along with some augmented versions, has become the default empirical specification for the estimation of reaction functions (Chappell and McGregor 2017).

Following Taylor (1993), the state of the economy is represented by inflation (π_t) and output (y_t):

$$i_t^* = r + \beta(\pi_t - \pi^*) + \gamma(y_t - y_t^*), \tag{1}$$

where i_t^* rises when inflation exceeds its target (π^*) or if output increases above its trend or potential value (y_t^*). The long-run equilibrium nominal (or natural) rate of interest, r, is defined as the equilibrium real rate (rr) plus the inflation rate. According to equation (1), the target interest rate is equal to its natural rate in equilibrium ($\pi_t - \pi^*$ and $y_t - y_t^*$ equal zero).

Therefore, the parameters β and γ indicate the sensitivity of the policy rate to changes in inflation and output, respectively. In theory, these parameters should be positive. This implies that relatively high interest rates are needed when inflation and output are above target in order to reduce inflationary pressure. On the other hand, central banks are likely to ease monetary policy to stimulate the economy when inflation is below its target or when output has not reached its potential value. Taylor (1993) finds that policymakers at the Federal Reserve place positive weights on both factors. Moreover, he considered past values of inflation to test the validity of the rule.

Equation (1) will be estimated for all central banks, but the main focus will be on potential differences in weights for inflation and output under two different governors in the same country. To test for these differences in the interest rate setting between central bank governors, this augmented equation will also be estimated:

$$i_t^* = r + \beta_1(\pi_t - \pi^*) + \gamma_1(y_t - y_t^*) + D_t[\beta_2(\pi_t - \pi^*) + \gamma_2(y_t - y_t^*)], \tag{2}$$

where D_t is a dummy variable taking the value 1 during the time period in which the newly appointed governor is in office, and 0 at the time his predecessor was chair of the committee. When β_2 and γ_2 are taking values other than zero, this will support the idea that the MPC puts different weights on inflation and output under these two governors.

Equations (1) and (2) will be estimated using ordinary least squares (OLS). In practice, past values (one lag) of inflation and output will be used in the regression analysis. Robust standard errors will be implemented to account for possible heteroscedasticity. Following Taylor (1993), the inflation target will be constant over time. Some central banks do not

publish a target. If the target is not clearly stated by the central bank, we pin it down through narrative evidence and in any case, it is often close to the sample average of inflation (see Table A3 in Appendix II). The long-term trend of the observed real interest rate, using kernel-weighted local polynomial smoothing, is considered as the equilibrium real rate, allowing for the possibility that the natural rate changes over time (see Leigh 2005).[2] For each MPC, we examine the monetary policy reaction functions during the incumbency of three successive governors. If the short-term interest rate turns negative (which occurs only in Japan and Sweden), we end the sample. An overview of the sample periods is given in Table 3.

4.2 The forward-looking Taylor rule

Clarida et al. (1998) suggested the use of a forward-looking specification of the Taylor (1993) rule. This version may better reflect central banking practice and the specification also allows taking other relevant variables (for example, interest rate smoothing) into account. Evidence shows, for example, that the European Central Bank (ECB) seems to follow forward-looking rules (Gorter et al. 2008). Furthermore, by incorporating forecasts, the model indirectly considers a broad array of information, which is a realistic feature of policy-making (Clarida et al. 1998). Instead of describing interest rate setting by using past or current values for inflation and output, Clarida et al. (1998) proposed the following rule:

$$i_t^* = r + \beta(E[\pi_{t+k}|\Omega_t] - \pi^*) + \gamma\Big(E\big[y_{t+p}|\Omega_t\big] - y_{t+p}^*\Big), \tag{3}$$

where E is the expectations operator and Ω_t represents the information available to the central bank at time t. As a result, the target for the short-term nominal interest rate (i_t^*) depends on the expected inflation gap k periods ahead and on the expected output gap p periods ahead. The horizons of inflation and output gap were chosen to be 1 year ($k = 12$) and 3 months ($p = 3$), respectively. According to Castro (2011), these horizons represent a reasonable description of the way the Federal Reserve and the ECB operate.

Equation (3) cannot capture the tendency of central banks to gradually adjust interest rates towards the desired level (Clarida et al. 1998). Castro (2011) advances some explanations for smoothing interest rate changes, like the fear of disrupting capital markets, the existence of a zero nominal interest rate lower bound or uncertainty about the impact of economic shocks. Other potential reasons are the need for consensus building to change the policy rate and the loss of credibility due to sudden large adjustments in monetary policy (Clarida et al. 1998). Thus, a term that captures interest rate smoothing is generally added to the model and is given by (Goodfriend 1991):

$$i_t = (1-\rho)i_t^* + \rho i_{t-1} \text{ with } \rho \in [0,1], \tag{4}$$

where ρ displays the degree of interest rate smoothing. The introduction of interest rate smoothing to monetary policy reaction functions is also a common procedure to control for autocorrelation in interest rates.

Defining $\alpha = rr + (1-\beta)\pi^*$ and $x_{t+p} = y_{t+p} - y_{t+p}^*$ and combining equation (3) with the interest rate smoothing term, yields the well-known form below (Castro 2011):

2 Leigh (2005) uses a Kalman filter to uncover the path of the natural rate of interest over time.

$$i_t = (1-\rho)\left[a + \beta E(\pi_{t+k}|\Omega_t) + \gamma E(x_{t+p}|\Omega_t)\right] + \rho i_{t-1} + u_t, \tag{5}$$

hereby assuming that central banks can only control interest rates up to an independent and identically distributed stochastic error (u_t). Following Clarida et al. (1998) and Castro (2011), the elimination of unobserved forecast variables from the expression leads to a policy rule in terms of realized variables:

$$\begin{aligned} i_t &= (1-\rho)\left[a + \beta\pi_{t+k} + \gamma x_{t+p}\right] + \rho i_{t-1} + \varepsilon_t, \text{ with } \varepsilon_t \\ &= -(1-\rho)\left\{\beta(\pi_{t+k} - E[\pi_{t+k}|\Omega_t]) + \gamma\left(x_{t+p} - E\left[x_{t+p}|\Omega_t\right]\right)\right\} + u_t, \end{aligned} \tag{6}$$

which shows that the error term (ε_t) is a linear combination of the forecast errors. Equation (6) does not allow testing for differences in interest rate setting between two periods. We introduce a dummy variable (D_t) as in equation (2):

$$\begin{aligned} i_t = (1-\rho_1)\left[a_1 + \beta_1\pi_{t+k} + \gamma_1 x_{t+p}\right] + \rho_1 i_{t-1} \\ + D_t\left\{(1-\rho_2)\left[a_2 + \beta_2\pi_{t+k} + \gamma_2 x_{t+p}\right] + \rho_2 i_{t-1}\right\} + \varepsilon_t, \end{aligned} \tag{7}$$

where ρ_2, β_2, and γ_2 measure the change in interest rate smoothing, and the reaction to inflation and output, respectively. We use the generalized method of moments (GMM) to estimate equations (6) and (7). Clarida et al. (1998) and Castro (2011) note that this method is well suited for analysing interest rate setting based on regressions with variables that are not known by the central bank at the decision-making moment. For the application of GMM, we impose a set of moment conditions. Therefore, we write both equations as follows:

$$E_t\left\langle i_t - (1-\rho)\left[a + \beta\pi_{t+k} + \gamma x_{t+p}\right] - \rho i_{t-1} | \nu_t \right\rangle = 0 \tag{8}$$

and

$$E_t\left\langle i_t - (1-\rho_1)\left[a_1 + \beta_1\pi_{t+k} + \gamma_1 x_{t+p}\right] - \rho_1 i_{t-1} - D_t\left\{(1-\rho_2)\left[a_2 + \beta_2\pi_{t+k} + \gamma_2 x_{t+p}\right] + \rho_2 i_{t-1}\right\} | \nu_t \right\rangle = 0, \tag{9}$$

where ν_t contains a set of (instrumental) variables of central bank's information at the time it chooses the interest rate. Those are lagged variables that are potentially useful for forecasting inflation and output and should not be correlated with the error term (given the exogeneity assumption). The set of instruments always includes a constant and lags 1–6, 9, and 12 of *Inflation*, *OutpGap*, *Yield10yr*, *Shareprices*, and *M3growth*, similar to Clarida et al (1998).[3] The 10-year government bond yield contains useful information about the future evolution of the interest rate (Castro 2011). In addition, past developments in financial conditions can be useful in forecasting future inflationary pressures. Furthermore, Castro (2011) added identical lags of the *M3* growth rate to capture the role of money, given the extensive use of quantitative easing as an expansionary form of monetary policy after the financial crisis. Furthermore, an optimal kernel-weighted matrix is used in the

3 Clarida et al. (1998) use lags 1–6, 9, and 12 of the output gap, inflation, the log difference of a world commodity price index, the day-to-day rate, and the log difference of the dm/dollar real exchange rate.

Table 4. Overview of the restricted sample (GMM)[a]

Central bank	Sample period	Chairs
Czech National Bank	July 2010–December 2019	Singer–Rusnok
Hungarian National Bank	March 2007–December 2019	Simor–Matolcsy
Bank of Japan	April 2008–February 2016	Shirakawa–Kuroda
Sweden's Riksbank	February 2003–January 2015	Heikenstein–Ingves
Bank of England	July 2003–December 2019	King–Carney
Federal Reserve System	February 2006–January 2018	Bernanke–Yellen

[a]Only the two latest governors are considered in the GMM estimation of the reaction function.

estimation, which accounts for possible heteroscedasticity and serial correlation. In this optimal weighting matrix, moment conditions with large variances receive relatively less weight in the estimation, because they contain less information about the population parameters than moment conditions with small variances (Wooldridge 2001). For a similar reason, we assign a lower weight to moment conditions with farther lagged instruments (Kuersteiner 2012). In addition, Hansen's (1982) overidentification test statistics are reported after each regression to assess the validity of the specification and the set of instruments. If the null hypothesis of Hansen's *J* test is rejected, the set of instruments is not valid and the moment conditions are violated. In this case, the model fails to explain forward-looking interest rate setting behaviour based on the set of instrumental variables.

Although the forward-looking Taylor rule is widely used, its empirical estimation may contain some caveats. One drawback of GMM is that it can lead to poor results when the number of parameters is large. To avoid this problem, we restrict the sample to two governors in the estimation of the forward-looking Taylor rule (see Table 4). Moreover, Woodford (2000) mentions that purely forward-looking procedures more easily result in indeterminacy of equilibrium, which means that the model might exhibit an infinitely large number of equilibria. As a consequence, the model can be too sensitive to arbitrarily small changes in parameters. Woodford (2000) concludes that the optimal procedure for analysing monetary policy also has to involve backward-looking elements. For this reason, the analysis of interest rate setting in this article is based on the backward-looking Taylor rule as well as the forward-looking Taylor rule.

4.3 Empirical results

Table 5 sets out the results of the backward-looking Taylor rule estimations for all six central banks and under different chairs. Column 1 presents the results for the OLS estimation of the linear Taylor rule with lagged nominal *InterestR*, *Yield10yr*, *Shareprices*, and *M3growth* as control variables. The estimations in column 2 include dummy variables to observe potential differences in interest rate setting between different governors. We discuss the results of each central bank in turn.

Czech Republic: The Czech National Bank responds to changes in inflation and output by changing the nominal interest rate. Long-term government bond yields do also seem to affect monetary policy decisions. Moreover, the estimations show that monetary policy under Governor Singer (2) is most responsive to recent changes in inflation, while Rusnok (3) attaches a relatively low weight to output.

Table 5. Results from the OLS estimation of the monetary policy reaction functions

	Czech Republic ($n = 228$) Tuma (1), Singer (2), Rusnok (3)		Hungary ($n = 225$) Jarái (1), Simor (2), Matolcsy (3)	
	1	2	1	2
InflGap (1)	0.505*** (0.032)	0.299*** (0.039)	0.486*** (0.039)	0.432*** (0.074)
OutpGap (1)	0.074*** (0.020)	0.143*** (0.023)	−0.085* (0.044)	0.170** (0.078)
InterestR (1)	0.086 (0.059)	0.221*** (0.070)	0.360*** (0.048)	0.397*** (0.038)
InflGap (2)		0.580*** (0.063)		−0.595*** (0.099)
OutpGap (2)		−0.052 (0.049)		−0.201** (0.083)
InterestR (2)		0.263** (0.121)		0.329*** (0.040)
InflGap (3)		0.052 (0.103)		0.129 (0.080)
OutpGap (3)		−0.101** (0.047)		−0.191** (0.045)
InterestR (3)		0.120** (0.057)		0.020 (0.045)
Yield10yr	−0.088** (0.036)	−0.217*** (0.046)	−0.240*** (0.054)	−0.414*** (0.054)
Shareprices	−0.002 (0.802)	−0.014* (0.008)	−0.031 (0.024)	−0.020 (0.017)
M3growth	0.010 (0.008)	0.028*** (0.008)	−0.026 (0.012)	0.037*** (0.012)
R^2	0.692	0.779	0.759	0.854
DW	0.194	0.366	0.379	0.701
	Japan ($n = 154$) Fukui (1), Shirakawa (2), Kuroda (3)		Sweden ($n = 252$) Bäckström (1), Heikenstein (2), Ingves (3)	
	1	2	1	2
InflGap (1)	0.089*** (0.016)	0.213** (0.081)	0.629*** (0.026)	0.785*** (0.042)
OutpGap (1)	0.001 (0.005)	−0.005 (0.020)	0.013 (0.014)	0.086** (0.036)
InterestR (1)	1.026*** (0.126)	1.141*** (0.153)	0.359*** (0.039)	0.416*** (0.040)
InflGap (2)		−0.095 (0.076)		−0.330*** (0.057)
OutpGap (2)		0.009 (0.020)		−0.065 (0.045)
InterestR (2)		−1.013*** (0.239)		−0.114*** (0.020)
InflGap (3)		−0.152* (0.083)		−0.253*** (0.055)
OutpGap (3)		−0.067** (0.028)		−0.090** (0.040)
InterestR (3)		0.043 (1.399)		0.039 (0.036)
Yield10yr	−0.639*** (0.025)	−0.537*** (0.062)	−0.262*** (0.031)	−0.304*** (0.031)
Shareprices	0.003 (0.004)	0.003 (0.004)	0.000 (0.007)	0.001 (0.008)
M3growth	−0.242*** (0.011)	−0.253*** (0.035)	−0.024 (0.004)	−0.019*** (0.005)
R^2	0.957	0.965	0.866	0.890
DW	0.257	0.407	0.263	0.361
	UK ($n = 317$) George (1), King (2), Carney (3)		USA ($n = 312$) Greenspan (1), Bernanke (2), Yellen (3)	
	1	2	1	2
InflGap (1)	0.567*** (0.053)	1.088*** (0.084)	0.219*** (0.062)	0.417*** (0.092)
OutpGap (1)	0.244*** (0.041)	0.360*** (0.080)	0.102*** (0.025)	0.265*** (0.069)
InterestR (1)	0.394*** (0.031)	0.498*** (0.029)	0.714*** (0.026)	0.679*** (0.026)
InflGap (2)		−0.498*** (0.106)		−0.454*** (0.145)

(continued)

Table 5. (continued)

	UK ($n = 317$) George (1), King (2), Carney (3)		USA ($n = 312$) Greenspan (1), Bernanke (2), Yellen (3)	
	1	2	1	2
OutpGap (2)		-0.232^{***} (0.087)		-0.258^{***} (0.073)
InterestR (2)		0.116^{***} (0.025)		0.198^{***} (0.021)
InflGap (3)		-1.146^{***} (0.093)		-0.892^{***} (0.326)
OutpGap (3)		-0.274^{***} (0.092)		-0.124 (0.125)
InterestR (3)		0.388^{***} (0.075)		0.602^{***} (0.090)
Yield10yr	-0.388^{***} (0.029)	-0.437^{***} (0.026)	-0.412^{***} (0.023)	-0.413^{***} (0.028)
Shareprices	-0.001 (0.012)	-0.003 (0.010)	0.014 (0.012)	0.015 (0.012)
M3growth	0.020^{**} (0.008)	-0.015^{**} (0.007)	-0.031^{***} (0.009)	-0.050^{***} (0.011)
R^2	0.541	0.733	0.816	0.867
DW	0.151	0.307	0.194	0.306

Notes: Column 1 presents the baseline OLS results; column 2 shows the OLS results with dummy variables for different governors. Robust standard errors are reported in parentheses, the DW test statistic is reported for each estimation. DW,Durbin–Watson.
$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

Hungary: The negative weight on output in the first column is not in line with theory and a potential reason for this result is that this central bank may have increased interest rates in the pursuit of price stability while output was below its potential value. In this conflict of monetary policy goals, reaching the inflation target prevails over achieving full employment or higher economic growth. The lowest weight on inflation is observed under Governor Simor (2) (with left political affiliation), while Governor Járai (1) (with right of centre affiliation) seems to respond most strongly to changes in the output gap.

Japan: Japan is a country that is characterized by uncommon (negative) inflation rates and nominal interest rates at (or close to) the zero-lower bound. Nevertheless, Governor Fukui (1) appears to be highly committed to reaching the inflation target, while Kuroda (3) shows a lower degree of responsiveness with respect to changes in inflation. The coefficient on interest rate smoothing is high because the nominal interest rate has hardly changed over time.

Sweden: Maintaining price stability is the primary objective of the Riksbank and the MPC does not seem to respond (strongly) to changes in the output gap. Furthermore, the OLS regression is consistent with a more focused attention to inflation from the conservative parties, since Governor Bäckström (1) (appointed by a conservative government) attaches the highest weight to changes in inflation. Governor Ingves (3) (appointed by a social democrat government) seems least concerned about changes in the output gap.

UK: The backward-looking Taylor rule shows that the Bank of England reacts to developments in both output and inflation. More specifically, Governor George (1) seems to react relatively strong to recent changes in inflation and output compared to Governors King (2) and Carney (3). Furthermore, changes in the (lagged) long-term government bond yield are negatively related to the level of the short-term interest rate. Share prices do not seem to play a major role in The Bank's policy decisions.

USA: The FOMC also takes a wide range of factors into account when deciding on the appropriate interest rate, responding not only to changes in inflation and output, but also to changes in the 10-year treasury rate and money supply. The dummy variables identify that the weights on inflation and the output gap are highest under the chairmanship of Greenspan (1), while there is a strong decrease in the weight on inflation under Governor Yellen (3) (the only chairman in our sample to be appointed by a Democratic president). Different priorities or interpretations of the dual mandate[4] could potentially support this result.

Results for the GMM estimation are presented in Table 6. The Hansen's *J*-statistic confirms the validity of the instruments in all estimations. The coefficients on inflation and output are generally in line with prior estimations, though the size of the weights on inflation tend to be higher due to the inclusion of Goodfriend's (1991) interest rate smoothing term. Column 2 shows the estimated differences between the forward-looking monetary policy reaction functions under different governors. As noted earlier, the sample is restricted to two governors (see Table 4).

Czech Republic: We find that monetary policy at the Czech National Bank can be well explained by a forward-looking model. The degree of interest rate smoothing is high, indicating that the central bank tends to set the interest rate close to the interest rate in the previous month. Just as in the OLS estimation, we observe that monetary policy under Governor Rusnok (2) is less responsive to changes in inflation and output than under Governor Singer (1). The effect of the output gap, however, is rather small in substantive terms—that is, a one-point increase in the output gap is, on average, followed by a seven basis points increase in the interest rate.

Hungary: The results exhibit that the Hungarian National Bank reacts strongly to expected changes in inflation. The second column indicates that Governor Simor (1) and Matolscy (2) respond similarly to changes in expected inflation and output. Yet, interest rate smoothing is particularly high under Governor Matolscy (2).

Japan: The estimated weights on inflation and output under both chairmen in Japan show again that reaching the inflation target is their top priority—with negative or insignificant weights on the expected output gap. In pursuing their annual goal for inflation, Shirakawa (1) seems to slightly more responsive to price fluctuations than Kuroda (2).

Sweden: The GMM estimation results for Sweden are somewhat difficult to interpret. While the first column displays a positive and significant reaction to changes in expected inflation and output (the Riksbank's MPC raises the interest rate by 0.6 p.p. for each one-point increase in the inflation gap), the coefficients under Heikenstein (1) in column 2 lack statistical significance, which might be due to his relatively short tenure (36 months). Regardless, we observe more hawkish behaviour under Governor Ingves (2), which aligns with the findings of Eijffinger et al. (2013).

UK: From the second column of the UK, it becomes clear that Governor Carney (2) attaches a lower weight to expected inflation than Governor King (1), which is in line with the OLS results and with the findings of Eijffinger et al. (2018). Governor Carney (2), however, seems to respond more strongly to changes in the expected output gap. The interest rate smoothing term is particularly high because the nominal interest rate hardly changed since the financial crisis of 2007/2008.

4 The two legislated goals of the Federal Reserve currently are price stability and full employment. The statutory mandate of the other central banks is solely maintaining price stability.

Table 6. Results from the GMM estimation of the monetary policy reaction functions

	Czech Republic ($n = 90$) Singer (1), Rusnok (2)		Hungary ($n = 130$) Simor (1), Matolcsy (2)	
	1	2	1	2
InflGap (1)	1.496*** (0.085)	1.530*** (0.195)	1.788*** (0.125)	1.783*** (0.298)
OutpGap (1)	0.515*** (0.078)	2.347*** (0.582)	0.006 (0.088)	0.015 (0.192)
InterestR (1)	0.983*** (0.002)	0.992*** (0.002)	0.931*** (0.007)	0.843*** (0.068)
InflGap (2)		−2.176*** (0.090)		−3.760 (3.948)
OutpGap (2)		−0.049*** (0.010)		−1.118 (1.191)
InterestR (2)		0.500*** (0.020)		1.179*** (0.141)
Hansen *J*-statistic	7.080 [1.000]	6.949 [1.000]	9.895 [1.000]	22.935 [0.942]
	Japan ($n = 71$) Shirakawa (1), Kuroda (2)		Sweden ($n = 121$) Heikenstein (1), Ingves (2)	
	1	2	1	2
InflGap (1)	0.393 (0.330)	0.866*** (0.071)	1.434*** (0.231)	0.402 (0.600)
OutpGap (1)	−0.387** (0.163)	−0.047 (0.037)	1.467*** (0.275)	−0.190 (0.516)
InterestR (1)	1.001*** (0.000)	1.001*** (0.000)	0.971*** (0.006)	1.166*** (0.119)
InflGap (2)		−0.070*** (0.003)		1.728*** (0.369)
OutpGap (2)		0.017*** (0.003)		−0.357 (0.260)
InterestR (2)		1.073*** (0.000)		0.517*** (0.167)
Hansen *J*-statistic	35.512 [0.585]	4.499 [1.000]	8.942 [1.000]	4.990 [1.000]
	UK ($n = 174$) King (1), Carney (2)		USA ($n = 120$) Bernanke (1), Yellen (2)	
	1	2	1	2
InflGap (1)	−0.198 (0.195)	0.769* (0.421)	2.786*** (0.171)	2.315*** (0.284)
OutpGap (1)	2.359*** (0.213)	1.556*** (0.275)	0.213*** (0.038)	0.283*** (0.100)
InterestR (1)	0.958*** (0.005)	0.924*** (0.016)	0.932*** (0.005)	0.924*** (0.014)
InflGap (2)		−0.248*** (0.058)		−1.204*** (0.132)
OutpGap (2)		0.113*** (0.040)		−0.354*** (0.050)
InterestR (2)		2.352*** (0.107)		1.756*** (0.047)
Hansen *J*-statistic	9.375 [1.000]	12.272 [1.000]	6.338 [1.000]	13.929 [0.999]

Notes: Column 1 presents the baseline GMM results; column 2 shows the GMM results with dummy variables for different governors. Standard errors are reported in parentheses, the *p*-value of the Hansen's *J* test for overidentification in square brackets.
$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

USA: The GMM results for the FOMC are largely in line with the OLS results. The results indicate that monetary policy under Governor Yellen (2) has been less inflation-averse and less recession-averse than under Governor Bernanke (1), which corresponds to earlier studies that have identified Yellen (2) as a dovish chair (Wilson 2014).

In sum, the analysis of the monetary policy reaction functions shows that a change in governor (individual) often involves a change in the interest rate setting behaviour of the committee (group). In our analysis, this alternation of monetary policy is captured by

differences in the weights on inflation and output. However, an important question remains: can political appointments explain the direction of these differences in monetary policy? The next section aims to answer this question.

5. Monetary Policy Functions Based on Political Appointment

To assess whether political appointments play a role in the interest rate setting by central banks, we specify and estimate a panel data model. Following this, we also provide an overview of governor inaugurations and a distinction between different political party ideologies.

5.1 Revision of the Taylor rule specifications

The decision to use a panel data model in this section mainly rests on two considerations. First, in some countries nearly all governors in the sample are appointed by the same political party, which makes it difficult to examine potential political influence within the country. Second, a panel data analysis across countries and over time includes more observations for the estimation of the Taylor rules, thereby improving the precision of the measurement system. A loss of accuracy is a potential disadvantage of a panel data model, because individual central banks with various traditions and mandates are estimated in one monetary policy reaction function. Therefore, the focus in the section is on the difference in coefficients related to political appointments rather than clarifying on the usefulness of the monetary policy reaction function.

In contrast to the previous section, we estimate only backward-looking Taylor rules, because the forward-looking model does not seem to adequately explain interest rate setting in all countries, nor does the GMM estimator appropriately capture (sometimes large) country-specific differences in monetary policy reaction functions. Equation (1) for panel data becomes:

$$i^*_{i,t} = r_i + \beta\left(\pi_{i,t} - \pi^*_i\right) + \gamma\left(y_{i,t} - y^*_{i,t}\right), \tag{10}$$

where $i^*_{i,t}$ is the target for the nominal short-term interest rate at central bank i at time t. To discover whether political appointments affect monetary policy, equation (10) has a dummy variable, which yields a specification comparable to equation (2):

$$i^*_{i,t} = r_i + \beta_1\left(\pi_{i,t} - \pi^*_i\right) + \gamma_1\left(y_{i,t} - y^*_{i,t}\right) + D_{i,t}\left[\beta_2\left(\pi_{i,t} - \pi^*_i\right) + \gamma_2\left(y_{i,t} - y^*_{i,t}\right)\right]. \tag{11}$$

Here, $D_{i,t}$ is an indicator for a central bank governor who is nominated by a right-wing political party representative. If β_2 and γ_2 are different from zero, this suggests that the political party appointing the governor matters for the conduct of monetary policy. We estimate equations (10) and (11) using random effects (RE) and (country) fixed effects (FE) regression models.

5.2. Data on governor appointments

This part of the analysis contains considerably more observations ($n = 1721$ for our 6 country sample). All governors in the time period between 1992 and 2019 are included in the estimation. The same variables are used for the estimation of the Taylor rules.

The main difference lies in the treatment of the dummy variable in the specification. For a correct application of the dummy variable, three pieces of information have to be combined: when is the governor inaugurated, who nominated him or her, and which political party does this authority represent? We find this information from Neuenkirch (2015) and from central bank websites. An overview is available in Appendix III (Table A4).

Thereafter, one has to distinguish between political party ideologies. In most cases, the identification of right-wing political parties is relatively straightforward. For example, a Chancellor of the Exchequer from the Conservative Party in the UK is considered more right wing than a representative of the Labour Party. The General Council of the Riksbank appoints the central bank governor in Sweden. The parliament names the members of the General Council after each general election. We assume that the ideology of the political party that has reached the highest number of seats in the parliament is reflected in the view of the members of the General Council. However, the lines of political affiliation of the authorities that nominate central bank governors in the Czech Republic are less clearly drawn. The Presidents Havel and Klaus were officially 'independent' when they nominated Governors Kysilka, Tosovsky, Tuma, and Singer. Based on this political status, the DPI addresses a centrist view to both presidents. However, according to a characterization by Myant (2005, p. 249), Havel 'saw himself maintaining a position derived ultimately from fundamental moral principles', while Klaus 'was a disciple of the monetarist economist Milton Friedman and admirer of the British prime minister, Margaret Thatcher'. For this reason, President Klaus is considered a right-wing politician.[5] As stated earlier, the dummy variable takes the value of 1 if the governor is nominated by a right-wing authority and 0 otherwise.

In the next section, we present the estimation results of the backward-looking Taylor rules with a dummy variable based on political appointment in six OECD countries (the 'benchmark sample'). As a robustness check, we also estimate specifications (10) and (11) using an extended sample. In this extended sample the following OECD countries are added to the analysis: Canada, Denmark, Israel, Korea (rep.), Mexico, and Norway. These countries are selected based on data availability and exchange rate regime.[6] With the addition of these new countries, we have 3351 observations. An overview of the inflation targets and governor appointments in these countries is given in Appendices II and III.

5.3 Empirical results

This empirical estimates of the models above show evidence of significant differences in the interest rate setting between committees based on which political party appointed the governor. The full results are presented in Tables 7 and 8.

Table 7 displays the results of the RE regressions. The set of control variables encompasses a lagged nominal *InterestR*, *Yield10yr*, *Shareprices*, and *M3growth*. In all estimations, an increase in inflation above target is accompanied by a rise in the interest rate. Within our sample, central bankers—on average—decide to raise the interest rate by 0.4

5 Potuček (1999) also notes that Havel's politics are led by spiritual and moral values, while Klaus presents himself as an orthodox neoliberal, both in economic and in political terms.

6 We only included countries that report monthly data on our key variables. Time periods in which countries did not have a free-floating exchange rate regime (e.g. Korea before 1998) are also excluded from the sample.

Table 7. Results from the RE estimation of the monetary policy reaction functions based on political appointment

	Benchmark sample ($n = 1721$)		Extended sample ($n = 3353$)	
	1	2	1	2
InflGap	0.463*** (0.040)	0.303*** (0.039)	0.477*** (0.030)	0.391*** (0.050)
OutpGap	0.008 (0.034)	0.017 (0.069)	0.018 (0.020)	0.021 (0.035)
InterestR	0.401*** (0.072)	0.440*** (0.062)	0.380*** (0.058)	0.394*** (0.062)
InflGap (d)		0.283*** (0.044)		0.162*** (0.057)
OutpGap (d)		0.004 (0.082)		−0.002 (0.042)
InterestR (d)		−0.052 (0.048)		−0.037 (0.034)
Yield10yr	−0.265*** (0.085)	−0.275*** (0.089)	−0.247*** (0.056)	−0.245*** (0.056)
Shareprices	−0.012 (0.008)	−0.014* (0.008)	−0.012** (0.005)	−0.012** (0.005)
M3growth	−0.023 (0.014)	−0.022 (0.014)	−0.014 (0.012)	−0.012 (0.014)
_cons	−0.102 (0.241)	−0.050 (0.243)	−0.221* (0.117)	−0.203 (0.137)
R^2	0.686	0.703	0.618	0.626

Notes: Column 1 presents the baseline RE results; column 2 shows the RE results with a dummy variable for right-wing appointed governors. Robust standard errors are reported in parentheses.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Table 8. Results from the FE estimation of the monetary policy reaction functions based on political appointment (country FE)

	Benchmark sample ($n = 1721$)		Extended sample ($n = 3353$)	
	1	2	1	2
InflGap	0.423*** (0.058)	0.264** (0.069)	0.431*** (0.038)	0.328*** (0.051)
OutpGap	0.011 (0.034)	0.022 (0.068)	0.020 (0.019)	0.026 (0.034)
InterestR	0.440*** (0.090)	0.477*** (0.087)	0.432*** (0.076)	0.447*** (0.083)
InflGap (d)		0.257*** (0.058)		0.180*** (0.045)
OutpGap (d)		0.001 (0.080)		−0.006 (0.041)
InterestR (d)		−0.070 (0.037)		−0.028 (0.033)
Yield10yr	−0.278** (0.105)	−0.270* (0.105)	−0.296*** (0.071)	−0.300*** (0.072)
Shareprices	−0.012 (0.008)	−0.014 (0.008)	−0.012** (0.005)	−0.012** (0.005)
M3growth	−0.021 (0.013)	−0.019 (0.014)	−0.010 (0.009)	−0.009 (0.010)
_cons	−0.188 (0.257)	−0.182 (0.235)	−0.223** (0.087)	−0.199** (0.090)
R^2	0.683	0.699	0.613	0.621

Notes: Column 1 presents the baseline FE results; column 2 shows the FE results with a dummy variable for right-wing appointed governors. Robust standard errors are reported in parentheses.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

p.p. in response to a one-point increase in inflation above the target level. The coefficients on the output gap are also positive, but lack statistical significance, suggesting that reaching the inflation target generally prevails over achieving higher economic growth. The second column presents regression results with a dummy variable for right-wing appointed governors. In both samples, we observe a higher weight on inflation under right-wing appointed

governors. Moreover, we do not find differences in the responsiveness to changes in the output gap or interest rate smoothing.

Table 8 reports on the results of the FE regressions. As in previous estimations, the interest rate dynamics are highly persistent, as described by a significant degree of smoothing in the sample. Furthermore, the central banks react primarily to changes in inflation and, in some cases, also to changes in share prices and government bond yields. Results for the FE regression with a dummy variable for political appointment are provided in the second column. We observe relatively high weights on inflation under right-wing appointed governors, which supports the view that these central bankers are more inflation averse (that is, hawkish) than governors appointed by relatively leftist parties (Chappell et al. 1993; Ehrmann and Fratzscher 2011). As a further robustness check, we also added a measure of CBI to the analysis—an index constructed by Garriga (2016)—to see whether and how this would affect the results. As shown in Table A5 (Appendix IV), our qualitative results hold also in this case, in both the benchmark and in the extended sample.

6. Conclusions

The responsibility for the conduct of monetary policy in many countries lies with a committee rather than a single individual. Even though dissents occur frequently in these committees, it is remarkable that the chair is almost never on the losing side of the vote. This could mean that the chair has high power over the committee, or it could imply that the chair aligns with the sentiment of the majority.

To address this issue, this article explores whether a change in central bank governor has an impact on the interest rate setting behaviour of the committee. In addition, we study the extent to which these differences can be attributed to the political appointment of the governor.

In the first part of the analysis, we add a dummy variable for a change in governor to the traditional monetary policy functions. The results show that the replacement of a governor often involves a change in the interest rate setting behaviour of the committee. The different monetary policy stances between governors become apparent in the weights on inflation and output and in the degree of interest rate smoothing. This result can be an indication of a disproportionate influence of the chair on monetary policy decisions.

This study also inquired whether these differences are based on political appointment. For this reason, we included a dummy variable for right-wing appointed governors in the second part of the analysis. The results provide evidence of a partisan effect on interest rate setting through the political appointment of the governor. Monetary policy appears to be more hawkish under governors that are appointed by a right-wing political authority. These results are robust to a new dataset including 12 countries.

These findings suggest that important challenges remain after decades of central bank reform. Although there is a general consensus on the advantages of interest rate setting by committee, central banks (and accordingly, countries) may not reap the full benefits as individuals exert disproportionate influence on monetary policy decisions. The same holds for CBI. When governors are subject to short-term political pressures through the appointment channel, then this could harm the banks' credibility and price stability in the longer run.

References

Adolph, C. (2013), *Bankers, Bureaucrats and Central Bank Politics: The Myth of Neutrality*, Cambridge University Press, Cambridge.

Belke, A. and N. Potrafke (2012), "Does Government Ideology Matter in Monetary Policy? A Panel Data Analysis for OECD Countries", *Journal of International Money and Finance* **31**, 1126–39.

Berger, H. and U. Woitek (2005), "Does Conservatism Matter? A Time-Series Approach to Central Bank Behaviour", *The Economic Journal* **115**, 745–66.

Bhattacharjee, A. and S. Holly (2006), "Taking Personalities out of Monetary Policy Decision Making? Interactions, Heterogeneity and Committee Decisions in the Bank of England's MPC", Working Paper Series, Centre for Dynamic Macroeconomic Analysis (CDMA), St. Andrews.

Blinder, A. S. (2004), *The Quiet Revolution: Central Banking Goes Modern*, Yale University Press, New Haven, CT.

Blinder, A. S. (2007), "Monetary Policy by Committee: Why and How?", *European Journal of Political Economy* **23**, 106–23.

Blinder, A. S. and J. Morgan (2005), "Are Two Heads Better than One? Monetary Policy by Committee", *Journal of Money, Credit and Banking* **37**, 789–811.

Cahan, D., L. Doerr, and N. Potrafke (2019), "Government Ideology and Monetary Policy in OECD Countries", *Public Choice* **181**, 215–38.

Castro, V. (2011), "Can Central Banks' Monetary Policy Be Described by a Linear (Augmented) Taylor Rule or by a Nonlinear Rule?", *Journal of Financial Stability* **7**, 228–46.

Chappell, H. W. and R. R. McGregor (2017), "The Lower Bound and the Causes of Monetary Policy Inertia: Evidence from Sweden", *Applied Economics* **49**, 1132–46.

Chappell, H. W., R. R. McGregor, and T. A. Vermilyea (2014), "Power-Sharing in Monetary Policy Committees: Evidence from the United Kingdom and Sweden", *Journal of Money, Credit and Banking* **46**, 665–92.

Chappell, H. W., T. M. Havrilesky, and R. R. McGregor (1993), "Partisan Monetary Policies: Presidential Influence Trough the Power of Appointment", *The Quarterly Journal of Economics* **108**, 185–218.

Clarida, R., J. Gali, and M. Gertler (1998), "Monetary Policy Rules in Practice: Some International Evidence", *European Economic Review* **42**, 1033–67.

Clark, W. R. (2003), *Capitalism, Not Globalism—Capital Mobility, Central Bank Independence, and the Political Control of the Economy*, The University of Michigan Press, Ann Arbor.

Claussen, C. A., E. Matsen, Ø. Røisland, and R. Torvik (2012), "Overconfidence, Monetary Policy Committees and Chairman Dominance", *Journal of Economic Behavior & Organization* **81**, 699–711.

Dickey, D. A. and W. A. Fuller (1979), "Distribution of the Estimators for Autoregressive Time Series with a Unit Root", *Journal of the American Statistical Association* **74**, 427–31.

Dreher, A., J. Sturm, and J. de Haan (2010), "When is a Central Bank Governor Replaced? Evidence Based on a New Data Set", *Journal of Macroeconomics* **32**, 766–81.

Ehrmann, M. and M. Fratzscher (2011), "Politics and Monetary Policy", *The Review of Economics and Statistics* **93**, 941–60.

Eijffinger, S. C., R. J. Mahieu, and L. Raes (2013), "Estimating the Preferences of Central Bankers : An Analysis of Four Voting Records," Discussion Paper 2013-047, Tilburg University, Center for Economic Research.

Eijffinger, S. C., R. J. Mahieu, and L. Raes (2015), "Hawks and Doves at the FOMC", CentER Discussion Paper Series No. 2015-013, European Banking Center Discussion Paper, No. DP10442. https://ssrn.com/abstract=2570848 or 10.2139/ssrn.2570848.

Eijffinger, S. C., R. J. Mahieu, and L. Raes (2018), "Inferring Hawks and Doves from Voting Records", *European Journal of Political Economy* **51**, 107–20.

Ennser-Jedenastik, L. (2014), "Party Politics and the Survival of Central Bank Governors", *European Journal of Political Research* **53**, 500–19.

Garriga, A. G. (2016), "Central Bank Independence in the World: A New Dataset", *International Interactions* **42**, 849–68.

Gerlach-Kristen, P. (2006), "Monetary Policy Committees and Interest Rate Setting", *European Economic Review* **50**, 487–507.

Gerlach-Kristen, P. (2008), "The Role of the Chairman in Setting Monetary Policy: Individualistic vs. Autocratically Collegial MPCs", *International Journal of Central Banking* **4**, 119–43.

Giesenow, F. M. and J. de Haan (2019), "The Influence of Government Ideology on Monetary Policy: New Cross-Country Evidence Based on Dynamic Heterogeneous Panels", *Economics and Politics* **31**, 216–39.

Göhlmann, S. and R. Vaubel (2007), "The Educational and Occupational Background of Central Bankers and Its Effect on Inflation: An Empirical Analysis", *European Economic Review* **51**, 925–41.

Goodfriend, M. (1991), "Interest Rate Smoothing and the Conduct of Monetary Policy", *Carnegie-Rochester Conference Series on Public Policy* **34**, 7–30.

Gorter, J., J. Jacobs, and J. de Haan (2008), "Taylor Rules for the ECB Using Expectations Data", *The Scandinavian Journal of Economics* **110**, 473–88.

Hansen, L. P. (1982), "Large Sample Properties of Generalized Method of Moments Estimators", *Econometrica* **50**, 1029–54.

Hodrick, R. J. and E. C. Prescott (1997), "Postwar US Business Cycles: An Empirical Investigation", *Journal of Money, Credit and Banking* **29**, 1–16.

Horváth, R., S. Katerina, and J. Zápal (2012), "Central Banks' Voting Records and Future Policy", *International Journal of Central Banking* **8**, 1–19.

Kuersteiner, G. M. (2012), "Kernel-Weighted GMM Estimators for Linear Time Series Models", *Journal of Econometrics* **170**, 399–421.

Kuttner, K. N. and A. S. Posen (2010), "Do Markets Care Who Chairs the Central Bank?", *Journal of Money, Credit and Banking* **42**, 347–71.

Kwiatkowski,D., P. C., Phillips, P., Schmidt, & Y., Shin (1992). Testing the nullhypothesis of stationarity against the alternative of a unit root. *Journal ofeconometrics*, **54**(1-3),159.

Leigh, D. (2005), "Estimating the Implicit Inflation Target: An Application to U.S. Monetary Policy", IMF Working Paper, No. 05/77: 1–24. https://ssrn.com/abstract=888123.

Leigh, D. (2009), "Monetary Policy and the Lost Decade: Lessons from Japan", IMF Working Paper, No. 09/232: 1–33.

McGregor, R. R. (1996), "FOMC Voting Behavior and Electoral Cycles: Partisan Ideology and Partisan Loyalty", *Economics and Politics* **8**, 17–32.

Moser, C. and A. Dreher (2010), "Do Markets Care about Central Bank Governor Changes? Evidence from Emerging Markets", *Journal of Money, Credit and Banking* **42**, 1589–612.

Myant, M. (2005), "Klaus, Havel and the Debate over Civil Society in the Czech Republic", *Journal of Communist Studies and Transition Politics* **21**, 248–67.

Neuenkirch, M. (2015), "Establishing a Hawkish Reputation: Interest Rate Setting by Newly Appointed Governors", *Applied Economic Letters* **22**, 391–6.

Potuček, M. (1999), "Havel versus Klaus: Public Policy Making in the Czech Republic", *Journal of Comparative Policy Analysis* **1**, 163–76.

Riboni, A. and F. Ruge-Murcia (2014), "Dissent in Monetary Policy Decisions", *Journal of Monetary Economics* **66**, 137–54.

Sakamoto, T. (2008), *Economic Policy and Performance in Industrial Democracies—Party Governments, Central Banks and the Fiscal-Monetary Mix*, Routlegde, London, New York.

Sibert, A. (2003), "Monetary Policy Committees: Individual and Collective Reputations", *Review of Economic Studies* **70**, 649–65.

Taylor, J. B. (1993), "Discretion versus Policy Rules in Practice", *Carnegie-Rochester Conference on Public Policy* **39**, 195–214.

Tootell, G. M. B. (1996), "Appointment Procedures and FOMC Voting Behavior", *Southern Economic Journal* **63**, 191–204.

Vuletin, G. and L. Zhu (2011), "Replacing a "Disobedient" Central Bank Governor with a "Docile" One: A Novel Measure of Central Bank Independence and Its Effect on Inflation", *Journal of Money, Credit and Banking* **43**, 1185–215.

Wilson, L. (2014), "A Dove to Hawk Ranking of the Martin to Yellen Federal Reserves", *SSRN Electronic Journal*. Doi: 10.2139/ssrn.2529195.

Woodford, M. (2000), "Pitfalls of Forward-Looking Monetary Policy", *American Economic Review* **90**, 100–4.

Wooldridge, J. M. (2001), "Applications of Generalized Method of Moments Estimation", *Journal of Economic Perspectives* **15**, 87–100.

Appendix

Table A1. Description of variables and sources

Countries	Variables	Description and source
Czech Republic Hungary	InterestR[a]	Short-term (3-month) interest rate; OECD (monthly average); Monthly Financial Statistics (http://stats.oecd.org)
Japan Sweden	Inflation[b]	Inflation rate computed as the annual rate of change of the CPI, all items; OECD, Monthly Financial Statistics (http://stats.oecd.org)
UK USA	OutpGap	Output gap calculated as the percentage deviation of the (log) industrial production index, seasonally adjusted; OECD, Monthly Financial Statistics (http://stats.oecd.org)
Canada Denmark Israel	Yield10yr	Long-term (10-year) government bond yield (monthly average); OECD, Monthly Financial Statistics (http://stats.oecd.org)
Korea (rep.) Mexico	M3growth	Annual rate of change of the monetary aggregate M3, seasonally adjusted; OECD, Monthly Financial Statistics (http://stats.oecd.org)
Norway	Shareprices	Share prices computed as the monthly change of the share price index (CPI deflated); OECD, Monthly Financial Statistics (http://stats.oecd.org)

[a]For Japan, we use the uncollateralized overnight call rate (monthly average) from the central bank website, because 3-month interest rate data are only available from 2002.
[b]For the USA, we use the core inflation rate, computed as the annual rate of change of the CPI less food and energy.

Appendix I

Description of economic variables

Most data are from national central banks and the OECD's Monthly Financial Statistics (see Table A1). Figures A1–A6 show the evolution of the main variables in the dataset.

Various measures of interest rates and inflation are used in this study, depending on central bank characteristics. The equilibrium real rate is defined as the long-term trend of nominal interest rates minus inflation. For all countries, the output gap is derived from the percentage deviation of the log industrial production index from its Hodrick and Prescott (1997) trend.[7] Data for the output gap are seasonally adjusted.

Stationarity is required for all variables included in the estimated model. If a variable is non-stationary, the regression analysis may produce unreliable and spurious results. Therefore, a unit root test (Dickey and Fuller 1979) and a Kwiatkowski,D et al. (1992) stationarity test are performed over the variables in the estimation. The results are given in Table A2.

The evidence in favour of the stationarity hypothesis is consistent for the output gap. There is, however, no proof for a stationary process of inflation in Hungary. Furthermore, unit root in the interest rates is an issue for the Czech Republic, Hungary, and the USA.

7 See Castro (2011) and Neuenkirch (2015).

Figure A1. Czech Republic (January 1993–December 2019).

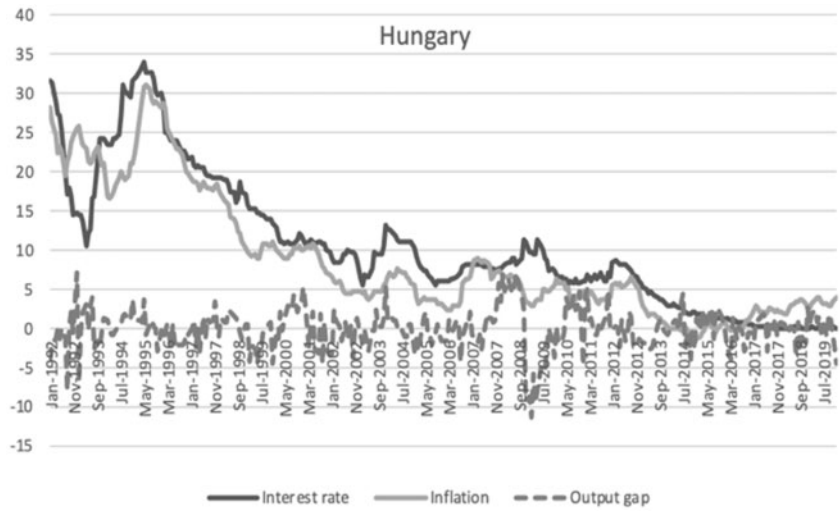

Figure A2. Hungary (January 1992–December 2019).

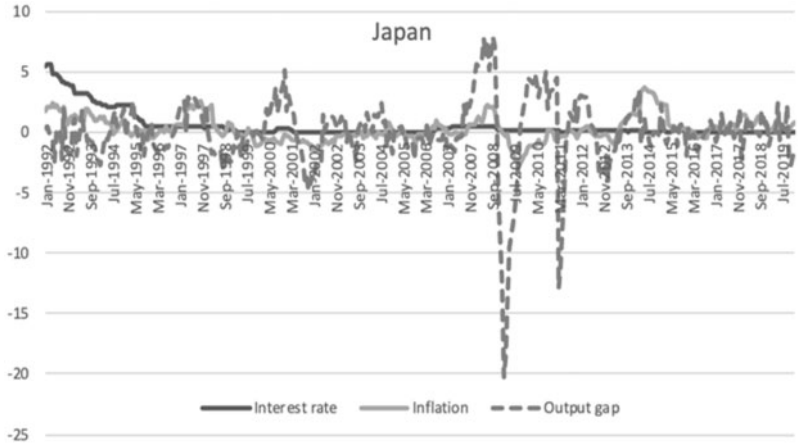

Figure A3. Japan (January 1992–December 2019).

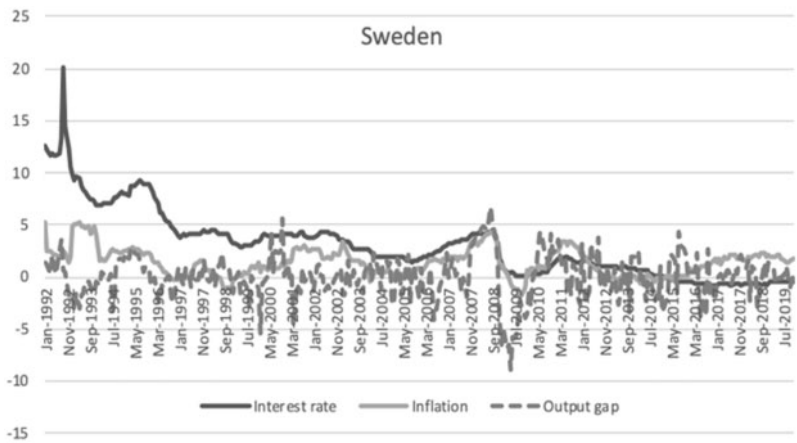

Figure A4. Sweden (January 1992–December 2019).

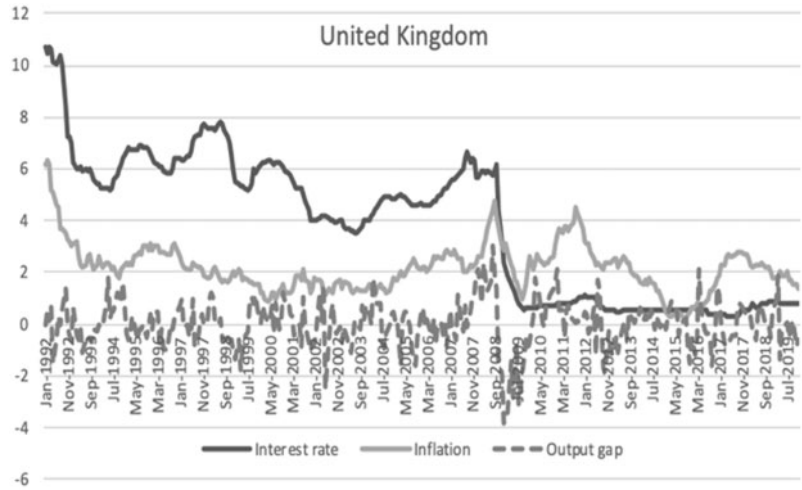

Figure A5.UK (January 1992–December 2019).

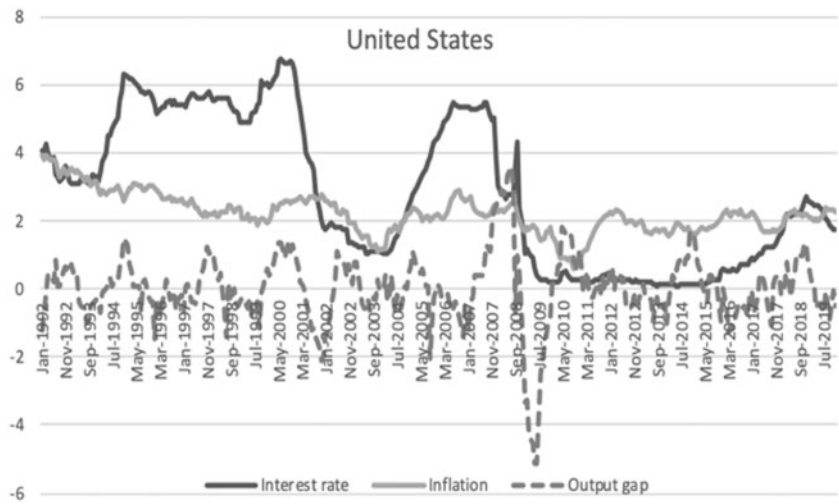

Figure A6.USA (January 1992–December 2019).

Table A2. Unit root and stationarity tests (Newey–West automatic bandwidth selection)

	Sweden		Hungary		Czech Republic	
	DF	KPSS	DF	KPSS	DF	KPSS
Interest rate	−2.738[a]	0.265	−2.160	0.198	−2.146	0.323
Inflation	−3.744[a]	0.095[b]	−2.502	0.415	−3.618[a]	0.362
Output gap	−9.017[a]	0.014[b]	−10.645[a]	0.014[b]	−9.278[a]	0.014[b]
1% crit. value	−3.453	0.216	−3.453	0.216	−3.453	0.216
5% crit. value	−2.877	0.146	−2.877	0.146	−2.877	0.146
10% crit. value	−2.570	0.119	−2.570	0.119	−2.570	0.119

	USA		UK		*Japan*	
	DF	KPSS	DF	KPSS	DF	KPSS
Interest rate	−0.932	0.125	−2.528	0.100[b]	−8.785[a]	0.396
Inflation	−3.022[a]	0.261	−4.327[a]	0.176[b]	−3.327[a]	0.219
Output gap	−4.856[a]	0.013[b]	−9.370[a]	0.014[b]	−5.859[a]	0.013[b]
1% crit. value	−3.453	0.216	−3.453	0.216	−3.453	0.216
5% crit. value	−2.877	0.146	−2.877	0.146	−2.877	0.146
10% crit. value	−2.570	0.119	−2.570	0.119	−2.570	0.119

[a]Unit root is rejected at a significance level of 10% = stationarity.
[b]Stationarity is not rejected at a significance level of 10%.

Appendix II

Table A3. Inflation targets in backward-looking models

Central bank	Sample average π (%)	Target π (begin–end) (%)
Czech National Bank[a]	2.22	4.5–2
Hungarian National Bank[a]	4.57	7–3
Bank of Japan[b]	0.10	1–2
Sweden's Riksbank[a]	1.41	2
Bank of England[a]	2.17	2.5–2
Federal Reserve System[b]	2.23	2
Bank of Canada[a]	1.79	3–2
Danmarks Nationalbank[b]	1.99	2
Bank of Korea[a]	2.43	3–2
Bank of Mexico[a]	4.27	3
Norges Bank[a]	2.09	2.5–2
Bank of Israel[a]	3.54	10–2

Notes: Danmarks Nationalbank: Denmark implicitly has the same inflation target as the euro area.
[a]Target retrieved from central bank website.
[b]Bank of Japan: Leigh (2009) displays some narrative evidence that the medium to long-term target for price stability lies with most committee members at 1%. In September 2016, the MPC adopted an explicit 2% target. Federal Reserve System: Leigh (2005) shows that the implicit inflation target of the USA fluctuates around 2% in the period 1995–2005.

Appendix III

Table A4. Central bank governor inaugurations

Country	Governor	Inauguration	Nominated by	Political party	Ideology	Right wing
Czech Republic	Tosovsky	January 1993	Havel	Independent	N/A	No
	Kysilka	August 1998	Havel	Independent	N/A	No
	Tuma	December 2000	Havel	Independent	N/A	No
	Singer	July 2010	Klaus	Independent	N/A	Yes
	Rusnok	August 2016	Zeman	SPO	Social Democratic	No
Hungary	Bod	December 1991	Antall	MDF	Conservatism	Yes
	Surányi	March 1995	Horn	MSZP	Social Democratic	No
	Járái	March 2001	Orbán	Fidesz	Conservatism	Yes
	Simor	March 2007	Gyurcsány	MSZP	Social Democratic	No
	Matolcsy	March 2013	Orbán	Fidesz	Conservatism	Yes
Japan	Mieno	December 1989	Kaifu	LDP	Conservatism	Yes
	Matsushita	December 1994	Murayama	SDPJ	Social Democratic	No
	Hayami	March 1998	Hashimoto	LDP	Conservatism	Yes
	Fukui	March 2003	Koizumi	LDP	Conservatism	Yes
	Shirakawa	April 2008	Fukuda	LDP	Conservatism	Yes
Sweden	Dennis	October 1982	Olof Palme	SAP	Social Democratic	No
	Bäckström	January 1994	General Council	Moderate Party[a]	Conservatism	Yes
	Heikenstein	January 2003	General Council	SAP[a]	Social Democratic	No
	Ingves	January 2006	General Council	SAP[a]	Social Democratic	No
UK	Leigh-Pemberton	July 1983	Lawson	Conservative Party	Conservatism	Yes
	George	July 1993	Clarke	Conservative Party	Conservatism	Yes
	King	July 2003	Brown	Labour Party	Social Democratic	No
	Carney	July 2013	Osborne	Conservative Party	Conservatism	Yes
USA	Greenspan	August 1987	Reagan	Republican Party	Conservatism	Yes
	Bernanke	February 2006	Bush	Republican Party	Conservatism	Yes
	Yellen	February 2014	Obama	Democratic Party	Social Democratic	No
	Powell	February 2018	Trump	Republican Party	Conservatism	Yes
Canada	Crow	February 1987	Mulroney	PCP	Conservatism	Yes
	Thiessen	February 1994	Chrétien	LPC	Social Liberalism	No
	Dodge	February 2001	Chrétien	LPC	Social Liberalism	No
	Carney	February 2008	Flaherty	CPC	Conservatism	Yes

(continued)

Table A4. (continued)

Country	Governor	Inauguration	Nominated by	Political party	Ideology	Right wing
	Poloz	June 2013	Flaherty	CPC	Conservatism	Yes
Denmark	Hoffmeyer	January 1965	Krag	SD	Social Democratic	No
	Andersen	January 1995	P.N. Rasmussen	SD	Social Democratic	No
	Bernstein	November 2005	A.F. Rasmussen	Venstre	Conservatism	Yes
	Rohde	February 2013	T-Schmidt	SD	Social Democratic	No
Israel	Frenkel	January 1991	Shamir	Likud	Conservatism	Yes
	Klein	January 2000	Barak	HaAvoda	Social Democratic	No
	Fischer	May 2005	Sharon	Likud	Conservatism	Yes
	Flug	November 2013	Netanyahu	Likud	Conservatism	Yes
	Yaron	November 2018	Netanyahu	Likud	Conservatism	Yes
Korea (rep.)	Kyung-shik	August 1995	Young-sam	DLP	Conservatism	Yes
	Chol-hwan	March 1998	Dae-jung	NCNP	Liberalism	No
	Seung	April 2002	Dae-jung	MDP	Liberalism	No
	Seong-tae	April 2006	Moo-hyun	Uri Party	Social Liberalism	No
	Choong-soo	April 2010	Myung-bak	GNP	Conservatism	Yes
	Ju-yeol	April 2014	Guen-hye	NFP	Conservatism	Yes
Mexico	Aguayo	January 1982	Gortari	PRI	Nationalism	No
	Martínez	January 1998	Zedillo	PRI	Nationalism	No
	Carstens	January 2010	Calderón	PAN	Conservatism	Yes
	Díaz de León	December 2017	Peña Nieto	PRI	Nationalism	No
Norway	Skånland	January 1985	Council of State	Høyre[a]	Conservatism	Yes
	Moland	January 1994	Council of State	Labour Party[a]	Social Democratic	No
	Storvik	January 1996	Council of State	Labour Party[a]	Social Democratic	No
	Gjedrem	January 1999	Council of State	KrF[a]	Conservatism	Yes
	Olsen	January 2011	Council of State	Labour Party[a]	Social Democratic	No

[a]Party that has reached the highest number of seats in the latest elections.

Appendix IV

Table A5.Results from the RE and FE estimations of the monetary policy reaction functions based on political appointment (with CBI)

	Benchmark sample ($n = 1721$)		Extended sample ($n = 3353$)	
	1	2	1	2
InflGap	0.295*** (0.044)	0.261** (0.074)	0.370*** (0.051)	0.322*** (0.054)
OutpGap	0.019 (0.071)	0.023 (0.068)	0.023 (0.035)	0.026 (0.034)
InterestR	0.435*** (0.062)	0.471*** (0.089)	0.387*** (0.062)	0.446*** (0.083)
InflGap (d)	0.291*** (0.048)	0.264*** (0.063)	0.185*** (0.054)	0.191*** (0.045)
OutpGap (d)	−0.002 (0.084)	−0.000 (0.080)	−0.005 (0.042)	−0.007 (0.041)
InterestR (d)	−0.050 (0.050)	−0.069 (0.036)	−0.034 (0.034)	−0.027 (0.032)
Yield10yr	−0.269*** (0.087)	−0.250* (0.115)	−0.234*** (0.055)	−0.285*** (0.070)
Shareprices	−0.014* (0.008)	−0.013 (0.008)	−0.013** (0.005)	−0.012** (0.005)
M3growth	−0.024* (0.013)	−0.018 (0.014)	−0.015 (0.013)	−0.008 (0.010)
CBI	0.228 (0.286)	0.595 (0.622)	0.567** (0.231)	0.857 (0.557)
_cons	−0.181 (0.330)	−0.588 (0.555)	−0.510 (0.206)	−0.712* (0.359)
Country FE?	No	Yes	No	Yes
R^2	0.704	0.696	0.631	0.625

Notes: Column 1 presents the RE results; column 2 shows the FE results with a dummy variable for right-wing appointed governors. Robust standard errors are reported in parentheses.
$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.