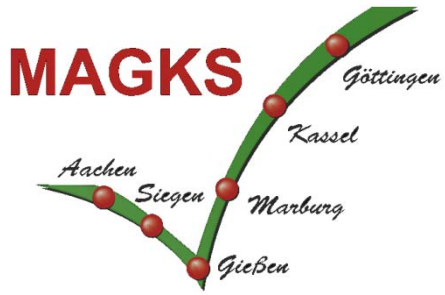

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Matthias Neuenkirch

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Coordination: Bernd Hayo • Philipps-University Marburg
Faculty of Business Administration and Economics • Universitätsstraße 24, D-35032 Marburg
Tel: +49-6421-2823091, Fax: +49-6421-2823088, e-mail: hayo@wiwi.uni-marburg.de

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Matthias Neuenkirch

RWTH Aachen University and Philipps-University Marburg

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Corresponding author:

Matthias Neuenkirch
School of Business and Economics
RWTH Aachen University
D-52062 Aachen
Germany
Tel.: +49 - (0)241 - 80 - 96203
Fax: +49 - (0)241 - 80 - 693931
Email: matthias.neuenkirch@rwth-aachen.de

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Establishing a hawkish reputation: Interest rate setting by newly appointed central bank governors

Abstract

In this paper, we explore the interest rate setting behavior of newly appointed central bank governors. We use the Kuttner and Posen (2010) sample, which covers 15 OECD countries, and estimate an augmented Taylor (1993) rule for the period 1974–2008. We find, first, that newly appointed governors fight inflation more aggressively during the first four to eight quarters of their tenure in an effort to establish a reputation for being inflation averse. Second, we find a significantly stronger reaction to inflation by newly appointed governors working within monetary policy frameworks comprised of an at least partly independent central bank and an explicit nominal anchor.

Keywords: Central bank governors, credibility, inflation, monetary policy, reputation, Taylor rules.

JEL: E31, E43, E52, E58.

1. Introduction

The appointment of a new central bank governor[1] is usually accompanied by public uncertainty about her/his preferences regarding the inflation-output tradeoff. As a consequence, agents have to update their inflation expectations based on incomplete information about the governor's characteristics. One popular hypothesis is that newly appointed central bankers are perceived as "dovish" (i.e., willing to tolerate higher inflation rates) until they have established a credible "hawkish" (i.e., inflation-averse) reputation (Kuttner and Posen, 2010). If this "weak until proven strong" hypothesis is true, new governors will need to demonstrate their willingness to fight inflation immediately after taking office. In the context of a Taylor (1993) rule, this could imply a stronger reaction to inflation during the first quarters after inauguration.[2]

In this we paper, we explore the interest rate setting behavior of newly appointed governors. We use the Kuttner and Posen (2010) sample, which covers 15 OECD countries and 50 changes in the central bank head's office. We estimate Taylor rules (TR) using the dynamic panel GMM estimator for these 15 countries and the period 1974–2008. In addition to standard parameters for interest rate inertia, inflation, and the output gap, we include interaction terms covering a period of four to eight quarters after a new governor takes office.

To the best of our knowledge, this is the first paper to empirically assess whether a central bank governor's reaction to inflation varies throughout her/his incumbency.[3] We ask and answer two research questions.

1. *Do newly appointed governors fight inflation more aggressively during the first quarters of their tenure?*

Reaction to inflation during the inauguration phase could vary across institutional environment. In the case of a well-defined nominal anchor and a high degree of central bank independence (i.e., a strong monetary policy framework), agents might view the

[1] We use the term "governor" to refer to the central bank's head, even though the actual job title sometimes is "president" or "chairman."

[2] Currently, it is typically committees that decide on appropriate interest rates. However, empirically, the governor is found to have a huge influence on them. For instance, Blinder (2007) concludes that Alan Greenspan was influential enough to almost always impose his view on the Federal Open Market Committee. Although it is doubtful that the governor has complete discretion in setting the interest rate all the time, she/he is almost never outvoted in monetary policy decisions (Claussen et al., 2012). This implies that the governor should have at least some agenda setting power when it comes to a vote in the monetary policy committee.

[3] Hansen and McMahon (2011) study the voting behavior of individual members of the Bank of England's Monetary Policy Committee. However, their analysis focuses on the preferred level of interest rates and dissents throughout the central banker's tenure, rather than on the reaction to inflation.

scope for dovish monetary policy as limited. In this case, new central bankers might not be perceived as completely dovish after inauguration, which then would require less of an *additional* reaction (if any) to inflation. Consequently, our second research question is:

2. *Do governors in strong and weak monetary policy frameworks behave differently during their inauguration phase?*

The remainder of the paper is structured as follows. Section 2 discusses some theoretical considerations underlying the "weak until proven strong" hypothesis and its implications for new governors' "fight" against inflation. Section 3 introduces the data set and the empirical methodology. Section 4 discusses the empirical results. Section 5 concludes.

2. Theoretical considerations

In this section, we discuss the theory behind why we expect newly appointed central bank governors to signal more inflation-averse behavior. A useful starting point is the standard quadratic loss function that the central banker attempts to minimize (Barro and Gordon, 1983):

$$(1)\ L = \sum_{t=0}^{\infty} \delta^t \, (\tilde{\pi}_t^2 + \lambda \tilde{y}_t^2),$$

where $\tilde{\pi}$ is the deviation of inflation from its target value and $\tilde{y}$ is the corresponding deviation of output from potential output. Future losses are discounted by the factor δ. λ is the weight attached to output losses relative to inflation stabilization. The central banker is unable to commit to the fully optimal policy plan (Kydland and Prescott, 1977).

Establishing a hawkish reputation (Backus and Drifill, 1985a, 1985b; Vickers, 1986) is one solution to this commitment problem. For instance, a "conservative" central banker (Rogoff, 1985) has a small value for λ and is more willing to tolerate output fluctuations than inflation fluctuations. However, a priori, agents are uncertain about the new governor's preferences (Cukierman and Meltzer, 1986).[4] They have to form beliefs about the true parameter λ. A further complication for new governors is that the public does not observe λ directly; rather, they observe a noisy indicator (λ_t^{obs}) due to the time lag in the implementation of monetary policy and potential control errors:

[4] A credibility problem could also arise because a newly appointed governor cannot commit to the predecessor's policy plan (Schaumburg and Tambalotti, 2007).

$$(2)\ \lambda_t^{obs} = f(\lambda_{t-1}^{obs}, \lambda_t^{sign}, \psi_t),$$

where the observed preferences are a function of past observed preferences (λ_{t-1}^{obs}), the preferences signaled by the governor in the current period (λ_t^{sign}), and a stochastic error (ψ_t). The error terms are uncorrelated but their variances become smaller over time, that is, uncertainty about the preferences declines. λ_t^{obs} is updated each period by monitoring the governor's reaction to inflation and output and policy outcomes until the beliefs become more accurate and converge toward the signaled parameter λ^{sign}.

One of the crucial tasks of a central banker is to keep public inflation expectations anchored. Agents update their inflation expectations according to the following equation:

$$(3)\ \pi_t^e = f(\pi_{t-1}^e, \lambda_t^{obs}),$$

where expected inflation is a function of past inflation expectations and observed preferences. The specification follows Bomfim and Rudebusch (2000), who model inflation expectations as a function of credibility, which in turn is determined by the past inflation record and/or expectations as to whether the central bank will meet its target in the near future (i.e., how it is perceived by the public). Thus, a hawkish reputation helps anchor inflation expectations, whereas a dovish reputation leads to an increase in inflation expectations.

Under the "weak until proven strong" hypothesis, the public initially assigns central bankers a particularly high value of λ, that is, they consider new governors to be dovish. As a consequence, to avoid an increase in inflation expectations, newly appointed governors have to convince agents of their willingness to fight inflation immediately after taking office. Therefore, new governors have to initially signal a low value of λ. Moreover, as the perception λ_t^{obs} is noisy (along the lines of Cukierman and Meltzer, 1986), governors, to ensure that the public will perceive them as being hawkish, need to signal an extra low value of λ.

After having established a reputation for being inflation averse and thus warding off an increase in inflation expectations, the central banker can choose the actual preferred level of λ, which should be higher than λ^{sign}. Choice of a higher value of λ goes some distance toward explaining why the degree of inflation aversion implicit in TR

estimates is lower when considering the full tenure rather than focusing on the period after inauguration.

The choice of a low initial level of λ^{sign} is optimal not only for actual hawks, but also for doves, as shown by Barro (1986). If agents observe low inflation, it raises their expectations that the policymaker is committed to low inflation (hawk), even though, in truth, the policymaker may be a dove. Barro (1986) shows that the dove follows this incentive to masquerade and mimics being a hawk for a while, but eventually moves toward high inflation. Consequently, we expect an increased reaction to inflation during the first periods after inauguration, regardless of whether the new governor is a hawk or a dove.

Hansen and McMahon (2011) observe such behavior in the matter of voting by the Bank of England's Monetary Policy Committee. They show that newly appointed central bankers prefer higher interest rates over the first 12 to 24 month of their tenure with the purpose of anchoring inflation expectations. In general, they find that the preferred level of interest rates decreases with experience.

3. Data and econometric methodology

3.1. Data

Our sample consists of 15 OECD countries: Australia, Canada, Finland, France, Germany, Italy, Japan, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.[5] The data are quarterly and cover the period Q1-1974 to Q4-2008. The starting point is the end of the Bretton Woods era as there was no room for national discretion before then. The sample ends in Q4-2008 as most of the central banks examined in this paper reached the zero-lower bound of interest rates and have conducted monetary policy by unconventional means ever since. For euro adopters, the sample period ends in Q4-1998.

Kuttner and Posen (2010) identify 50 governor appointments in their sample. Their analysis focuses on the *financial market reaction* to the *announcement* of governor *appointments*, whereas we are interested in governor *behavior after* the *inauguration*. The latter dates are taken either from the extensive data set by Dreher et al. (2008, 2010) or central bank websites. Table A1 in the Appendix lists all inauguration dates.

[5] All countries that joined the OECD after 1974 are omitted from the sample as are countries with no scope for independent monetary policy. For example, Austria pegged its schilling against the German mark and Luxembourg had no central bank before 1998 and relied on the Belgium National Bank's monetary policy. Interestingly, Belgium itself pegged its franc against the German mark.

We assume a governor to have an effect on the end-of-quarter interest rate if she/he is in office for more than a month during the respective quarter.[6] As it is a priori unclear how long newly appointed governors behave differently in their effort to establish credibility, we employ five different horizons in the empirical analysis, ranging from four to eight quarters after inauguration (Hansen and McMahon, 2011).

Finally, we distinguish between strong and weak monetary policy (MP) frameworks in our analysis (see also Table A1 in the Appendix). Again, we build on the data set by Kuttner and Posen (2010) and characterize monetary policy regimes as strong if they satisfy two criteria. First, the central bank must be at least partially independent, which means that the central bank is under no obligation to finance government spending and the governor cannot be dismissed without cause (Kuttner and Posen, 2001). Second, the central bank must follow either an explicit inflation target or an operational intermediate money target.

3.2. Empirical methodology

Our empirical specification follows the monetary policy reaction function proposed by Taylor (1993) with an interest rate smoothing term ρ (Goodfriend, 1991):

$$(4)\ i_{i,t} = \rho i_{i,t-1} + (1-\rho)\left(\alpha_i + \beta\pi_{i,t} + \gamma\tilde{y}_{i,t}\right) + \mu_{i,t},$$

where the central bank rate in country i at time t ($i_{i,t}$) is explained by the lagged central bank rate ($i_{i,t-1}$), which is included to measure the degree of inertia in monetary policy. The other explanatory variables are the current inflation rate ($\pi_{i,t}$), measured as growth rate in the consumer price index to the previous year's period, and the output gap ($\tilde{y}_{i,t}$), derived from trend industrial production using a Hodrick-Prescott (1997) filter with $\lambda = 1600$. Finally, α_i represents a country fixed effect and $\mu_{i,t}$ the error term.[7]

[6] For instance, if the inauguration date is May-81, the governor can influence the central bank rate in Q2-1981. In contrast, central bankers who take office in Jun-81 will first affect the central bank rate in Q3-1981. We explored the robustness of this assumption with three additional settings: the governor had to be in office in the respective quarter for at least (i) one day, (ii) two months, or (iii) a full quarter. However, the differences across indicators are small as we focus on a period of four to eight quarters after inauguration. This implies that the indicators partly overlap and reduce differences across the indicators. All omitted results are available on request.

[7] Data sources: central bank rates (IMF), consumer price indexes (OECD), and industrial production (OECD). Note that the data used in this analysis are ex post data due to the lack of real-time data for all 15 countries and the complete sample period.

To test for potential differences in the interest rate setting of newly appointed governors versus the sample average (first research question), we augment Equation (4) as follows:

$$(5)\ i_{i,t} = \rho i_{i,t-1} + (1-\rho)\left(\alpha_i + \beta\pi_{i,t} + \gamma\tilde{y}_{i,t}\right) + D_{i,t}^{new,k}\left[\rho^{new} i_{i,t-1} + (1-\rho^{new})\left(\alpha^{new} + \beta^{new}\pi_{i,t} + \gamma^{new}\tilde{y}_{i,t}\right)\right] + \mu_{i,t},$$

where $D_{i,t}^{new,k}$ is a dummy variable taking the value 1 during the first $k = 4, \dots, 8$ quarters after a new governor takes office and 0 otherwise. ρ^{new}, β^{new}, and γ^{new} measure the change in interest rate smoothing and the reaction to inflation and output, respectively, for newly appointed governors versus the sample average. α^{new} indicates the change in the equilibrium real interest rate during that span. Statistically, we are interested in testing the null hypothesis $H_0: \beta^{new} \leq 0$. Rejecting this hypothesis in favor of the alternative $H_1: \beta^{new} > 0$ will support the idea that governors fight inflation more aggressively when they are new to office than they do, on average, throughout their tenure.[8]

A test for differences across strong and weak MP frameworks (second research question) is based on a small modification of Equation (5):

$$\begin{aligned}(6)\ i_{i,t} = {} & \rho i_{i,t-1} + (1-\rho)\left(\alpha_i + \beta\pi_{i,t} + \gamma\tilde{y}_{i,t}\right) \\ & + D_{i,t}^{str,k}\left[\rho^{str} i_{i,t-1} + (1-\rho^{str})\left(\alpha^{str} + \beta^{str}\pi_{i,t} + \gamma^{str}\tilde{y}_{i,t}\right)\right] \\ & + D_{i,t}^{weak,k}\left[\rho^{weak} i_{i,t-1} + (1-\rho^{weak})\left(\alpha^{weak} + \beta^{weak}\pi_{i,t} + \gamma^{weak}\tilde{y}_{i,t}\right)\right] \\ & + \mu_{i,t},\end{aligned}$$

where $D_{i,t}^{str,k}$ and $D_{i,t}^{weak,k}$ are dummy variables taking the value 1 during the first $k = 4, \dots, 8$ quarters after a new governor takes office in a central bank characterized by either a strong or a weak MP framework, respectively, and 0 otherwise. Here, we want to test the null hypothesis $H_0: \beta^{str} \geq \beta^{weak}$ against the alternative $H_1: \beta^{str} < \beta^{weak}$. A rejection of the null hypothesis implies less additional reaction by new governors in strong MP frameworks.

[8] One could also test for differences in the reaction to the output gap in Equations (5) and (6). However, as the regression estimates indicate no change in all cases, we focus on differences in the reaction to inflation.

Equations (4)–(6) are estimated using the dynamic panel GMM estimator.[9] GMM weights are based on the assumption of contemporaneous correlation between the cross-sections, which is convenient as central bank rates, inflation, and the output gap show a substantial degree of correlation across the sample countries.[10] As instruments for the lagged dependent variable, we employ its second to fifth lag.[11] To ensure the robustness of our findings and address Kiviet's (1995) criticism of dynamic panel GMM estimators, we additionally estimate Equations (4)–(6) using panel generalized least squares and weights based on the assumption of contemporaneous correlation between the cross-sections.[12]

4. Empirical results

4.1. Results for newly appointed governors

Table 1 sets out the results for equation (4) (baseline) and equation (5) covering five different time spans after inauguration (4 QTRS, … , 8 QTRS).

The results for the baseline specification indicate that interest rate setting is highly persistent (0.92). Furthermore, the central banks follow a Taylor rule as an increase in either inflation or the output gap is accompanied by a rise in the central bank rate. The coefficient for output (0.7) is in line with expectations as, for instance, Taylor (1993) recommends a coefficient of 0.5. However, the coefficient for inflation is smaller than 1, which implies that the Taylor principle, that is, raising the central bank rate by more than the actual increase in inflation, is not met.[13]

Turning to the augmented specifications, we can reject the null hypothesis $H_0: \beta^{new} \leq 0$ in favor of the alternative $H_1: \beta^{new} > 0$ for all five horizons.[14] Thus, we find

[9] Note that the panel is unbalanced as monetary policy in Finland, France, Germany, Italy, Portugal, and Spain has been conducted by the European Central Bank since Q1-1999. Furthermore, there are some missing observations for industrial production at the beginning of the sample in case of Australia and New Zealand.

[10] Note that the inclusion of cross-sectional dependence in the weighting matrix can also be interpreted as a proxy for time fixed effects.

[11] Note that standard econometric software is not able to invert the matrix of instruments when using all valid lags to define moment conditions (Arellano and Bond, 1991). Furthermore, simulation studies show that there is a tradeoff when increasing the number of lags: although efficiency increases, so does the finite sample bias of the GMM estimates (Judson and Owen, 1997).

[12] To ensure comparability to the GMM estimates, we use the same sample starting date (Q2-1975) although we do not need to specify lags of the endogenous variable as instruments.

[13] It is well known that monetary policy was considered "passive" during the 1970s in many Western economies (see, e.g., Lubik and Schorfheide, 2004) leading to such estimates. Not surprisingly, the reaction to inflation is significantly larger than 1 as soon as the starting point of the sample is restricted to 1983 or later.

[14] Note that formal testing is not required as Table 1 shows that the even more conservative two-sided null hypothesis $H_0: \beta^{new} = 0$ is rejected in all cases.

evidence of more hawkish behavior during the first four to eight quarters of a new governor's tenure. Governors try to establish a reputation for being inflation averse during that period by initially putting a larger weight on inflation in their reaction function.

Table 1: Results for newly appointed governors

	Baseline	4 QRTS	5 QRTS	6 QRTS	7 QRTS	8 QRTS
IR Smooth.	0.923 ***	0.924 ***	0.934 ***	0.936 ***	0.935 ***	0.935 ***
Inflation	0.762 **	0.776 **	0.748 **	0.717 **	0.729 **	0.713 **
Output Gap	0.700 ***	0.792 ***	0.816 ***	0.854 ***	0.872 ***	0.872 ***
New Governor						
… * IR Smooth.		–0.052	–0.095 **	–0.082 **	–0.079 **	–0.072 **
… * Inflation		0.539 *	0.418 **	0.561 **	0.539 **	0.517 **
… * Output Gap		–0.041	0.043	0.003	–0.024	–0.033
R^2	0.920	0.920	0.920	0.920	0.920	0.920
σ	1.344	1.345	1.344	1.344	1.344	1.345
J-Statistic	2.317	11.632 *	8.184	6.444	7.406	7.499

Notes: Estimates are for Equation (4) (baseline) and Equation (5) (4 QTRS, … , 8 QTRS). Number of observations: 1,772. GMM with a White (1980) cross-section instrument weighting matrix is used as the estimation technique. Lags 2–5 of the dependent variable are employed as instruments. The models include country fixed effects (not shown). Reported coefficients are estimates for the long-run coefficients for all governors and the corresponding long-run changes for newly appointed governors. Panel-robust standard errors are reported. ***/**/* indicate significance at the 1%/5%/10% level, respectively.

The additional reaction to inflation ranges from 0.42 to 0.56, which means that the Taylor principle is met for newly appointed governors as their total reaction, that is, the coefficient for all governors plus the additional reaction, ranges from 1.16 to 1.32. Furthermore, the degree of interest rate smoothing is significantly lower for newly appointed governors than for the reference group (exception 4 QTRS). This implies a more proactive monetary policy during the first five to eight quarters of tenure and is further support for the idea that such activity is engaged in for reputation-building purposes. Finally, the reaction to output fluctuations does not change during the first quarters of a governor's tenure.

Table A2 in the Appendix provides the corresponding panel generalized least squares results as a robustness test. The results are in line with the GMM estimates

above and confirm the hypothesis of more hawkish monetary policy during the first four to eight quarters after inauguration.[15]

4.2. Results for strong and weak MP frameworks

Table 2 presents the results for Equations (4) (baseline) and (6), that is, for newly appointed governors in strong MP frameworks and weak MP frameworks.

Table 2: Results for newly appointed governors in strong and weak MP frameworks

	Baseline	4 QRTS	5 QRTS	6 QRTS	7 QRTS	8 QRTS
IR Smooth.	0.923 ***	0.922 ***	0.936 ***	0.940 ***	0.939 ***	0.939 ***
Inflation	0.762 **	0.764 **	0.773 **	0.725 *	0.742 **	0.726 *
Output Gap	0.700 ***	0.767 ***	0.860 ***	0.899 ***	0.923 ***	0.911 ***
New Governor Strong MP Framework						
… * IR Smooth.		−0.105 ***	−0.097 ***	−0.068 **	−0.055 *	−0.017
… * Inflation		0.897 ***	0.882 ***	0.979 ***	1.146 ***	1.214 ***
… * Output Gap		0.007	0.016	0.028	−0.027	−0.084
New Governor Weak MP Framework						
… * IR Smooth.		−0.043	−0.085 **	−0.074 **	−0.077 **	−0.071 **
… * Inflation		0.443	0.385	0.556 **	0.513 **	0.480 **
… * Output Gap		−0.165	−0.065	−0.100	−0.105	−0.099
R^2	0.920	0.920	0.920	0.920	0.920	0.920
σ	1.344	1.345	1.346	1.346	1.346	1.347
J-Statistic	2.317	12.261	13.653	11.352	14.115	13.438

Notes: Estimates are for Equation (4) (baseline) and Equation (6) (4 QTRS, … , 8 QTRS). Number of observations: 1,772. GMM with a White (1980) cross-section instrument weighting matrix is used as the estimation technique. Lags 2–5 of the dependent variable are employed as instruments. The models include country fixed effects (not shown). Reported coefficients are estimates for the long-run coefficients for all governors, the corresponding long-run changes for newly appointed governors in a strong MP framework and in a weak MP framework. See Table A1 for details on the classification in the different regimes. Panel-robust standard errors are reported. ***/**/* indicate significance at the 1%/5%/10% level, respectively.

Newly appointed governors in strong MP frameworks show a rigorous and highly significant additional reaction to inflation, ranging from 0.88 to 1.21. Together with the baseline reaction to inflation, the Taylor principle is met for this group as the joint reaction ranges from 1.66 to 1.94. Their counterparts in a weak MP framework show a significant additional reaction to inflation for three horizons only (6 QTRS, 7 QTRS, and 8

[15] The overall coefficient for interest rate smoothing is marginally larger than in case of the GMM estimations, whereas the coefficients for inflation and the output gap are slightly lower. The degree of interest rate smoothing does not change for newly appointed governors. Finally, the additional reaction to inflation four to eight quarters after inauguration is significant but, again, marginally lower than in the GMM case.

QTRS). In these three cases, the Taylor principle is met, too, as the joint reaction to inflation ranges from 1.21 to 1.29. Both groups display a significantly lower degree of interest rate smoothing than the reference group (exceptions: 8 QTRS for strong MP frameworks and 4 QTRS for weak MP frameworks). Finally, there is no additional significant reaction to output fluctuations for either group of new governors.

In general, the magnitude of the additional reaction to inflation differs noticeably between the groups. We cannot reject null hypothesis $H_0: \beta^{str} \geq \beta^{weak}$ for all five horizons.[16] In contrast, the reversed null hypothesis $H_0: \beta^{str} \leq \beta^{weak}$ is rejected, revealing that governors in strong MP frameworks react significantly more strongly to inflation during the first four to eight quarters of their tenure than do their counterparts in weak MP frameworks.[17]

This result seems counterintuitive at first: the need to establish credibility should be less strong if the central bank is at least partly independent and has a nominal anchor that limits the scope for dovish monetary policy compared to the case of a weak MP framework. However, the central bank independence literature suggests an explanation. Hayo and Hefeker (2002) model the choice for a certain degree of central bank independence as a two-step procedure. In a first step, society decides as to the importance it attaches to fighting inflation, that is, its preferences regarding the inflation-output tradeoff. In a second step, the society chooses the best institutional arrangement for achieving the objective of price stability. As a consequence, societies that put a large weight on fighting inflation will choose more independent central banks with an explicit nominal anchor. Nevertheless, even though the strong MP framework might ensure a certain initial level of credibility for a new governor, given the society's preference for hawkish monetary policy, the new governor may still display a stronger reaction to inflation.

Table A3 in the Appendix provides the corresponding panel generalized least squares results as a robustness test. The results are in line with the GMM estimates above and confirm the findings of a significantly stronger reaction to inflation for newly appointed governors in strong MP frameworks compared to weak MP frameworks.[18]

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[16] Note that formal testing is not required as Table 2 indicates that point estimates for β^{str} are larger than for β^{weak}.

[17] The Chi^2(1)-test statistics are as follows: 1.85* (4 QRTS), 3.51** (5 QRTS), 2.65* (6 QRTS), 6.74*** (7 QRTS), and 4.36** (8 QRTS).

[18] In contrast to the GMM estimators, the degree of interest rate smoothing does not change for newly appointed governors in either strong or weak MP frameworks. Furthermore, the additional reaction to

5. Conclusions

In this paper, we explore the interest rate setting behavior of newly appointed central bank governors. We use the Kuttner and Posen (2010) sample, which covers 15 OECD countries and 50 changes in central bank head offices. We estimate Taylor rules using the dynamic panel GMM estimator for the period 1974–2008 and, in addition to the standard parameters, we include interaction terms covering a period of four to eight quarters after a new governor takes office Our analysis sheds light on two research questions.

First, newly appointed governors fight inflation more aggressively during the first four to eight quarters of their tenure. They try to establish a reputation for being inflation averse during this period by initially putting a larger weight on inflation. Furthermore, their interest rate setting is more proactive during this initial period. Second, we find a significantly stronger reaction to inflation by newly appointed governors in strong MP frameworks than in weak MP frameworks. At first glance, one would expect less of a need to establish credibility if the central bank is at least partly independent and has a nominal anchor. However, research by Hayo and Hefeker (2002) suggests that societies that have a preference for fighting inflation vigorously also choose more independent central banks with an explicit nominal anchor. In such a society, however, the reaction to inflation might still be considerably stronger, given the society's preferences.

Note that our results provide no direct test of the "weak until proven strong" hypothesis. We only measure governors' reaction to inflation after inauguration, which is larger than for the sample average regardless of the actual monetary policy framework. However, one rationale for this behavior is that governors anticipate public pessimism and, in an effort to avoid being perceived as weak, immediately work to establish a hawkish reputation.

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inflation in weak MP frameworks is marginally significant for only one specification (6 QTRS), whereas the corresponding additional reaction in strong MP frameworks is highly significant in all five cases.

References

Arellano, M. and S. Bond (1991), Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations, *Review of Economic Studies* 58, 277–297.

Backus, D. and J. Drifill (1985a), Inflation and reputation, *American Economic Review* 75, 530–538.

Backus, D. and J. Drifill (1985b), Rational expectations and policy credibility following a change in regime, *Review of Economic Studies* 52, 211–221.

Barro, R. J. (1986), Reputation in a model of monetary policy with incomplete information, *Journal of Monetary Economics* 17, 3–20.

Barro, R. J. and D. B. Gordon (1983), A positive theory of monetary policy in a natural rate model, *Journal of Political Economy* 91, 589–610.

Blinder, A. S. (2007), Monetary policy by committee: Why and how? *European Journal of Political Economy* 23, 106–123.

Bomfim A. N. and G. D. Rudebusch (2000), Opportunistic and deliberate disinflation under imperfect credibility, *Journal of Money, Credit and Banking* 32, 707–721.

Claussen, C. A., E. Matsen, O. Roisland, and R. Torvik (2012), Overconfidence, monetary policy committees and chairman dominance, *Journal of Economic Behavior and Organization* 81, 699–711.

Cukierman, A. and A. H. Meltzer (1986), A theory of ambiguity, credibility and inflation under discretion and asymmetric information, *Econometrica* 54, 1099–1128.

Dreher, A., J.-E. Sturm and J. de Haan (2008), Does high inflation cause central bankers to lose their job? Evidence based on a new data set, *European Journal of Political Economy* 24, 778–787.

Dreher, A., J.-E. Sturm and J. de Haan (2010), When is a central bank governor replaced? Evidence based on a new data set, *Journal of Macroeconomics* 32, 766–781.

Goodfriend, M. (1991), Interest rates and the conduct of monetary policy, *Carnegie-Rochester Conference Series on Public Policy* 34, 7–30.

Hansen, S. and M. McMahon (2011), First impressions matter: Signalling as a source of policy dynamics, *CEP Discussion Papers* No. 1074.

Hayo, B. and C. Hefeker (2002), Reconsidering central bank independence, *European Journal of Political Economy* 18, 653–674.

Hodrick, R. J. and E. C. Prescott (1997), Postwar U.S. business cycles: An empirical investigation, *Journal of Money, Credit and Banking* 29, 1–16.

Judson, R. A. and A. L. Owen (1997), Estimating dynamic panel data models: A practical guide for macroeconomists, *Finance and Economics Discussion Series*, Board of Governors of the Federal Reserve System.

Kiviet, J. F. (1995), On bias, inconsistency and efficiency of various estimators in dynamic panel data models, *Journal of Econometrics* 68, 53–78.

Kuttner, K. N. and A. S. Posen (2001), Beyond bipolar: A three-dimensional assessment of monetary frameworks, *International Journal of Finance and Economics* 6, 369–387.

Kuttner, K. N. and A. S. Posen (2010), Do markets care who chairs the central bank? *Journal of Money, Credit and Banking* 42, 347–371.

Kydland, F. E. and E. C. Prescott (1977), Rules rather than discretion: The inconsistency of optimal plans, *Journal of Political Economy* 85, 473–492.

Lubik, T. A. and F. Schorfheide (2004), Testing for indeterminacy: An application to U.S. monetary policy, *American Economic Review* 94, 190–217.

Rogoff, K. (1985), The optimal degree of commitment to an intermediate monetary target, *Quarterly Journal of Economics* 100, 1169–1189.

Schaumburg, E. and A. Tambalotti (2007), An investigation of the gains from commitment on monetary policy, *Journal of Monetary Economics* 54, 302–324.

Taylor, J. B. (1993), Discretion versus policy rules in practice, *Carnegie-Rochester Conference Series on Public Policy* 39, 195–214.

Vickers, J. (1986), Signalling in a model of monetary policy with incomplete information, *Oxford Economic Papers* 38, 443–455.

White, H. (1980), A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity, *Econometrica* 48, 817–838.

Appendix

Table A1: Governor inaugurations

Australia	
Fraser (W)	Sep 89
MacFarlane (S)	Sep 96
Stevens (S)	Sep 06

Canada	
Crow (W)	Feb 87
Thiessen (S)	Feb 94
Dodge (S)	Feb 01

Finland	
Karjalainen (W)	Mar 82
Kullberg (W)	Jun 83
Hamalainen (W)	Apr 92

France	
Clappier (W)	Jun 74
De la Geniere (W)	Nov 79
Camdessus (W)	Nov 84
De Larosiere (W)	Jan 87
Trichet (S)	Sep 93

Germany	
Emminger (S)	Jun 77
Poehl (S)	Jan 80
Schlesinger (S)	Aug 91
Tietmeyer (S)	Oct 93

Italy	
Baffi (W)	Aug 75
Ciampi (W)	Oct 79
Fazio (W)	Jun 93

Japan	
Mieno (W)	Dec 89
Matsushita (W)	Dec 94
Hayami (W)	Mar 98
Fukui (W)	Mar 03

New Zealand	
Brash (W)	Sep 88
Bollard (S)	Sep 02

Norway	
Storvik (W)	Feb 96
Gjedrem (W)	Jan 99

Portugal	
Moreira (W)	May 86
Beleza (W)	May 92
De Sousa (W)	Jun 94

Spain	
Rubio (W)	Jul 84
Luis Rojo (W)	Jul 92

Sweden	
Dennis (W)	Oct 82
Baeckstroem (S)	Jan 94
Heikensten (S)	Jan 03
Ingves (S)	Jan 06

Switzerland	
Leutwiler (S)	May 74
Languetin (S)	Jan 85
Lusser (S)	May 88
Meyer (S)	May 96
Roth (S)	Jan 01

United Kingdom	
Leigh-Pemberton (W)	Jul 83
George (W)	Jul 93
King (S)	Jul 03

United States	
Miller (W)	Mar 78
Volcker (W)	Aug 79
Greenspan (W)	Aug 87
Bernanke (W)	Feb 06

Source: Kuttner and Posen (2010), Dreher et al. (2008, 2010), and central bank websites. The classification in strong monetary policy frameworks (S) and weak monetary policy frameworks (W) follows Kuttner and Posen (2010).

Table A2: Results for newly appointed governors: Robustness test

	Baseline	4 QRTS	5 QRTS	6 QRTS	7 QRTS	8 QRTS
IR Smooth.	0.934 ***	0.937 ***	0.940 ***	0.940 ***	0.940 ***	0.939 ***
Inflation	0.685 ***	0.643 ***	0.648 ***	0.609 ***	0.614 ***	0.607 ***
Output Gap	0.519 ***	0.548 ***	0.600 ***	0.608 ***	0.628 ***	0.629 ***
New Governor						
… * IR Smooth.		−0.019	−0.037	−0.030	−0.026	−0.018
… * Inflation		0.405 *	0.372 *	0.477 **	0.412 **	0.360 **
… * Output Gap		0.061	0.012	0.029	−0.041	−0.105
R^2	0.919	0.919	0.919	0.919	0.919	0.919
σ	1.350	1.352	1.351	1.351	1.351	1.352

Notes: Estimates are for Equation (4) (baseline) and Equation (5) (4 QTRS, … , 8 QTRS). Number of observations: 1,772. Panel generalized least squares with a White (1980) cross-section weighting matrix is used as the estimation technique. The models include country fixed effects (not shown). Reported coefficients are estimates for the long-run coefficients for all governors and the corresponding long-run changes for newly appointed governors. Panel-robust standard errors are reported. ***/**/* indicate significance at the 1%/5%/10% level, respectively.

Table A3: Results for newly appointed governors in strong and weak MP frameworks: Robustness test

	Baseline	4 QRTS	5 QRTS	6 QRTS	7 QRTS	8 QRTS
IR Smooth.	0.934 ***	0.936 ***	0.939 ***	0.939 ***	0.939 ***	0.938 ***
Inflation	0.685 ***	0.632 ***	0.634 ***	0.599 ***	0.600 ***	0.593 ***
Output Gap	0.519 ***	0.534 ***	0.584 ***	0.593 ***	0.610 ***	0.614 ***
New Governor Strong MP Framework						
… * IR Smooth.		−0.102	−0.076	−0.062	−0.060	−0.042
… * Inflation		0.993 **	0.953 **	0.956 **	1.002 ***	0.922 ***
… * Output Gap		0.161 *	0.152	0.157	0.139	0.079
New Governor Weak MP Framework						
… * IR Smooth.		−0.006	−0.031	−0.024	−0.020	−0.013
… * Inflation		0.265	0.285	0.387 *	0.322	0.286
… * Output Gap		−0.092	−0.088	−0.064	−0.182	−0.235
R^2	0.919	0.919	0.919	0.919	0.919	0.919
σ	1.350	1.353	1.353	1.353	1.353	1.354

Notes: Estimates are for Equation (4) (baseline) and Equation (6) (4 QTRS, … , 8 QTRS). Number of observations: 1,772. Panel generalized least squares with a White (1980) cross-section weighting matrix is used as the estimation technique. The models include country fixed effects (not shown). Reported coefficients are estimates for the long-run coefficients for all governors, the corresponding long-run changes for newly appointed governors in a strong MP framework and in a weak MP framework. See Table A1 for details on the classification in the different regimes. Panel-robust standard errors are reported. ***/**/* indicate significance at the 1%/5%/10% level, respectively.