Testing for partisan behaviour in independent central banks: an analysis of voting in the National Bank of Poland

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Abstract
In many countries monetary policy is delegated to an independent central bank. Yet politicians may seek to exert an indirect influence on monetary policy via appointments to a central bank. This paper explores this possibility, testing for partisan political patterns in the behaviour of appointees to the Monetary Policy Council of the National Bank of Poland (NBP). The NBP provides a rare situation where the researcher can observe the voting choices of central bankers appointed by different partisan political actors. I use a Bayesian hierarchical choice model to estimate the revealed monetary policy preferences of NBP appointees based on their voting behaviour. The model specification takes account of the discrete nature of the vote choices made by NBP members and also makes use of proposal-related information so that revealed preference estimates can be measured on an interest rate scale. Using these estimates, I examine whether the left-right economic ideology of an appointing party is associated with the revealed preferences of NBP appointees. My results provide support for the proposition that parties seek to appoint central bankers with monetary policy preferences similar to their own. However, despite evidence of partisan appointments, parties are constrained in their ability to shift the position of the pivotal voter on the NBP Council.

Keywords: Monetary policy, central bank independence, partisan business cycle, appointments, committee voting.
1. Introduction

Described by Layard as “the central tool of macroeconomic stabilization” (1998 p. ix), monetary policy is one of the most important economic policies at a state’s disposal. Political economists have argued that there will be systematic differences in the monetary policy pursued by left- and right-wing politicians, because these politicians have differing partisan motivations (Hibbs, 1977; Havrilesky, 1987; Alesina and Sachs, 1988). However, in many countries today, monetary policy-making responsibilities are delegated to independent central banks. In these countries elected politicians may choose medium- or long-term economic targets for the central bank, but they do not formally have a direct role in deciding the current setting of monetary policy instruments. This paper examines whether, unable to directly make monetary policy decisions, politicians attempt to exert an indirect partisan influence on monetary policy through appointments to independent central banks. It also assesses the extent to which they are successful in this endeavour.

To investigate this, I collect and analyse data on the voting behaviour of members of the Monetary Policy Council of the National Bank of Poland (NBP), the ten-person committee that sets interest rates in Poland. The NBP Council presents an advantageous context in which to test a partisan theory of appointments to independent central banks for three main reasons. First, the nature of the appointment procedures for the NBP together with Polish electoral developments over the last decade has resulted in variation in the left-right economic ideology of the partisan coalitions involved in the appointment of Council members. Second, for nine of the ten members on the Council at any time, the nature of the appointment procedures has allowed both left- and right-wing coalitions to unilaterally make appointments, without having to bargain and compromise with actors from the opposing side of the left-right economic divide. Thus, in the vast majority of cases, it is possible to clearly
identify the partisan orientation of the actors that appoint individual Council members.

Third, because the NBP publishes the records of votes regarding interest rates on the Council, it is possible to compare the revealed monetary policy preferences of Council members appointed by different parties. The NBP Council is unique among central bank monetary policy-making committees in the degree to which it satisfies all three of these criteria.

I measure the revealed monetary policy preferences of NBP Council members by estimating a Bayesian hierarchical choice model of interest rate voting behaviour on the Council. This approach is similar in some senses to the Item-Response models used to analyse voting in legislatures (see for example, Clinton et al, 2004), in that it operationalises the spatial model of voting. But it also makes novel use of extra information available in the monetary policy context, regarding prevailing economic conditions and interest rate proposals. Incorporating this extra information allows me to estimate revealed monetary policy preferences on an interest rate scale, so that the magnitude of estimates is easily interpretable.

These estimates are used to draw inferences regarding the differences in the monetary policy preferences of NBP Council members appointed by economically left-wing and right-wing parties. Consistent with partisan theories of appointments, I find that Polish central bankers appointed by left-wing parties tend to prefer lower interest rates than those appointed by right-wing parties, controlling for economic conditions. However, there is evidence of heterogeneity in the preferences of members appointed by the same party, suggesting that politicians cannot select agents who will perfectly accord with their preferred monetary policy. Furthermore, I find that politicians are limited in their ability to shift the position of the pivotal voter on the Council. The magnitude of such shifts is constrained by the seeming inability of parties to appoint perfect agents, together with the disproportionate voting power
of the NBP President, the only Council member appointed as a result of inter-institutional -
and thus, in some situations, left-right - bargaining.

This paper not only contributes to the literature on partisan macroeconomic policy, but also relates to that on central bank independence. The delegation of monetary policy to a legally independent central bank has been advocated as a solution to a time-inconsistency problem (Rogoff, 1985). Empirical studies have constructed indices to measure central bank independence in order to test its effectiveness in reducing inflation (e.g. Grilli et al, 1991; Cukierman, 1992; Eijffinger, 1997). This paper can help inform the construction of such indices by providing micro-level evidence concerning politicians’ ability to influence monetary policy via central bank appointments and how this ability may be conditioned by the institutional design of a monetary policy-making committee.

The paper also demonstrates the usefulness of monetary policy-making committee voting records as a resource for testing more general theories of appointments to collective choice bodies. Recently, political scientists have sought to model such processes, often with courts in mind (e.g. Rohde and Shepsle, 2005; Krehbiel, 2007) but also applied to central banks (Chang, 2001). The method presented here for measuring monetary policy preferences yields estimates of individual preferences and pivotal voter preferences, measured on a substantively meaningful scale, that are ideally suited for testing these appointment models in the central banking context.

The rest of the paper is structured as follows. The next section reviews relevant literature and develops basic theoretical expectations. Then, section 3 introduces the case of the National Bank of Poland. Section 4 details the data set and statistical method used to develop measures of central banker behaviour in Poland. These measures are used to test for partisan influences on the National Bank of Poland in section 5. Section 6 concludes.
2. Politicians and independent central banks: Theory and existing evidence

According to theories of the ‘partisan business cycle’ (PBC), political parties have macroeconomic policy preferences that systematically differ. Regarding monetary policy, it is asserted that economically left-wing parties tend to prefer a less restrictive monetary policy than economically right-wing parties. For most PBC advocates, such as Hibbs (1977) and Alesina and Sachs (1988), this difference is due to the higher relative inflation-aversion among a right-party’s core electoral constituency compared to a left-party’s core electoral constituency, and the higher relative unemployment aversion among a left-party’s core electoral constituency compared to right-party’s core electoral constituency. Havrilesky (1987) suggests an alternative motivation, stemming from the ideological preference among left-wing parties for fiscal redistribution to low income voters. He suggests that left-wing parties seek to mitigate the resulting disincentive effects of this redistribution, which might otherwise lower real output and reduce voter support, by pursuing a relatively loose monetary policy. Whichever motivational story is posited, in general the PBC asserts that parties with left-of-centre economic ideologies prefer a less restrictive monetary policy than parties with right-of-centre economic ideologies.

The initial formulations of the PBC assumed that politicians had direct control over key macroeconomic policy instruments, including monetary policy. For example, explaining their model in terms of the US, Alesina and Sachs make “the implicit assumption... that the [incumbent] administration has some direct or indirect control over monetary policy, despite the relative independence of the Federal Reserve” (1988, p.67). Given the prevalence of central bank independence in developed and developing countries today, a more complete understanding of politicians and the economy must account for how, and under what
conditions, partisan politicians can influence the monetary policy of an independent central bank.

In the course of the past two decades, political scientists have begun to address this issue. Several scholars have identified appointments as a key channel through which political influence on a formally autonomous central bank may take place (Chang, 2001; Havrilesky & Gildea, 1992; Lohmann, 1997; Waller, 1998). They have formulated formal appointment models where politicians with partisan macroeconomic motivations seek to appoint central bankers whose views on monetary policy are aligned with their own. Generally, these models have been designed to examine how key institutional features of the appointment process affect equilibrium appointment outcomes. For the U.S., Chang (2003) models the President’s influence over monetary policy via Federal Reserve appointments, as constrained by the preferences of the Senate Banking Committee, the other key actor in the appointment game. Lohmann (1997) and Morris (2000) model how indirect political influence is constrained by staggered central bank committee appointment opportunities, and also decentralized appointment powers (where regional political actors control appointment for a number of posts).

In terms of empirical research, with regard to the Federal Reserve, Beck (1982) and Morris (2000) find that the reaction function of the Federal Funds Rate is influenced by political conditions. In the case of Germany, Lohmann (1998) and Berger and Woitek (2005) estimate reaction functions of monetary policy and find that the partisan affiliation of the median member of the Bundesbank Council affects monetary policy in a manner consistent with partisan appointments (though Lohmann finds the effect to be non-significant).

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1 Some have also analysed ‘direct’ political influence on legally independent central banks (Lohmann, 1998; Morris, 2000). From this perspective, politicians can pressurise the bank to implement a desirable monetary policy using, for example, the threat of legislation to reduce the bank’s autonomy should it fail to comply.
However, a focus on policy outcomes as the dependent variable leads to a reduced-form test of the partisan model of central bank appointments.

With this concern in mind, it is desirable to test whether the behaviour of individual central bank appointees accords with partisan appointment models. Where voting records for central bank monetary policy-making committees are available, researchers are able to perform this test. Taking advantage of the availability of Federal Open Market Committee (FOMC) voting records, both Gildea (1990) and Havrilesky and Gildea (1992) find that the frequency with which FOMC members appointed by Democrat Presidents vote for easier policy is significantly higher than that of Republican appointees. Regarding the Bundesbank, Berger and Woitek (2005) study limited Bundesbank voting data from 1948-1961 and find that Christian Democrat appointees tend to dissent more against discount rate cuts.²

Since they do not control for economic circumstances, these analyses might lead to biased inferences regarding appointee behaviour. For example, an individual who sits on a central bank committee during a period of relatively low economic growth may appear artificially ‘dovish’ because they vote for lower rates frequently given the economic circumstances. Chappell et al (2005; 1993) and Chang (2001) address this problem, estimating reaction functions that measure the relationship between the votes of FOMC members and key macroeconomic indicators. Chang (2001) utilises estimated differences in the average preferred interest rate of FOMC members, controlling for economic conditions. She identifies the probable location of the median member of the FOMC at any given time, and in turn shows that movements of the location of the median member over time provide support for her model of partisan appointments. Chappell et al (2005) too find evidence for indirect partisan political influences, in that being the appointee of a Democrat President has a statistically significant negative effect on the preferred interest rate of an FOMC member.

² Berger and Woitek (1997) also use the 1948-61 Bundesbank voting data to reject Vaubel’s (1997) hypothesis that central bankers appointed by the incumbent governing party favour easier policy in the run-up to elections.
This paper contributes to this literature by using new data to provide a relatively clean empirical test of the simple motivational assumption underlying models of partisan central bank appointments. In other words, it asks: relative to an economically left-wing party, does an economically right-wing party seek to appoint a central banker who generally prefers a more restrictive monetary policy? To answer this I collect and analyse voting data from the Monetary Policy Council of the National Bank of Poland.

The NBP Council presents an advantageous setting in which to conduct such a test. Not only is there variation in the left-right orientation of political actors involved in the appointment of different Council members over the past decade, but almost all of the appointments to the Council in this period have also been products of either an economically left-of-centre or right-of-centre appointing coalition, rather than some left-right compromise. This latter feature results from the fact that the Polish President, Senate (upper house) and Sejm (lower house) each unilaterally appoint three members to the ten-person Council. The consequence is that, in the Polish context, the partisan appointments logic generates relatively clean expectations as to the relative monetary policy preferences of appointees, which can then be tested using the voting data. This also enables me to assess whether, even in favourable institutional conditions where a party is relatively unconstrained in its ability to appoint its ex ante preferred candidate, appointees may turn out not to be “perfect agents” (Lohmann, 1997 pp.228; see also Keech and Morris, 1997). In other words, can central bank appointees be relied upon to act according to the wishes of the politicians who appointed them?

The features of NBP appointments contrast to some extent with the more extensively analysed case of the twelve-person FOMC in the US. There all seven Board of Governors (BOG) appointments are the product of inter-institutional bargaining between the President and the Senate, while the five remaining positions are taken by individuals appointed by
regional Reserve Banks. For the five latter positions, it is difficult to generate expectations of relative monetary policy preferences using the partisan appointment logic because they are not appointed directly by political actors. For the seven BOG positions, there is variation in the left-right orientation of appointing actors, but often BOG members are appointed in a period where party control of the Presidency and Senate differs. As a result, BOG appointments are often the product of some form of left-right interaction. For example, eight of the twenty-three BOG appointments analysed by Chang (2001) occur at a time when party control of the Presidency and Senate differs. Of course, Chang’s formal appointment model is specifically intended to tease out the monetary policy implications of this inter-institutional and cross-party interaction theoretically. Nevertheless, because of the frequency with which these left-right interaction appointments occur in the US case, it is difficult to use an empirical analysis of the Fed to separately test the partisan behavioural assumptions underlying Chang’s model and the conditional impact of institutional features posited by the model. The Polish case enables us to test partisan behavioural assumptions more directly.

The case of the Polish NBP is also advantageous for testing for partisan appointments relative to national central banks other than the Fed. Currently, six other OECD countries – namely, Czech Republic, Hungary, Japan, Korea, Sweden and the UK - have central banks that publish voting records and consequently enable researchers to observe and analyse the voting behaviour of individual central bank appointees. However, in both Korea and Sweden political actors are involved in the central bank appointment process only indirectly. In the remaining four countries, politicians are directly involved in central bank appointments but there is little or no variation in the partisan orientation of appointing actors during the time-period in which central bank votes are available. Finally, though voting data is also available for the German Bundesbank Council in the years 1948-1961, Berger and Woitek

3 For an analysis of UK voting records, see for example, Besley et al (2008) and Hix et al (2009).
(2005, p 752) report that this data is not always complete. Thus it is difficult to test theories of partisan appointments in other countries where voting data is available. This underlines the value of studying appointments to the National Bank of Poland, where we are better able to perform this test.

3. The case of the National Bank of Poland: Institutional and political context

Having outlined the theoretical motivation for the study of the National Bank of Poland, in this section I introduce the NBP and its Monetary Policy Council in more detail.

Institutional context

According to the 1997 National Bank of Poland Act, the Monetary Policy Council of the NBP is the body designated with the sole authority to determine monetary policy in Poland. While the Act mandates the NBP Council to pursue a primary objective of price stability, it leaves the Council to define price stability in operational terms. Since 1999 the MPC has set multi-annual inflation targets and has set monetary policy with the stated goal of achieving this inflation target. These targets have generally taken the form of an acceptable inflation range measured on the Consumer Price Index (for example, since January 2004 the NBP inflation target has been 2.5 per cent CPI plus or minus one percentage point), and there are no formal sanctions for MPC members if this target is missed.

The Council consists of ten individuals: nine ‘rank-and file’ members together with the NBP President. All are appointed for a non-renewable term of six years and can only be involuntarily removed from their posts on the grounds of serious misconduct. The Council has held a monetary policy meeting, chaired by the NBP President, once a month since
February 1998. Decisions are taken by majority vote with the NBP President holding the casting vote in the event of a tie and any Council member can submit a proposal to be voted on (Maier, 2007, pp.28). Records of these votes are available from January 2000 onward, enabling us to examine the relative monetary policy preferences of Council members (I detail below how these votes are coded and analysed). Though Sirchenko (2008) and Kotlowski (2006) have estimated economic reaction functions of NBP Council members, this is the first paper to exploit the variation in the partisan orientation of member’s appointing principals in order to examine political appointment patterns.

The appointment procedures for the NBP Council are as follows. Every six years, the Polish President, Senate (upper house) and Sejm (lower house) each unilaterally appoint three of the rank-and-file Council members. The tenth Council member is the NBP President and chair of the Monetary Policy Council, who is appointed by the President with majority approval from the Sejm. Originally following the same appointment cycle as the nine other Council members, the NBP President is now appointed according to a cycle that is three years advanced to that of the nine other members because of the early resignation of one NBP President with three years left of her term.

*Political context of appointments*

Appointment procedures for the nine rank-and-file Council members present an opportunity to test for evidence of partisan appointments. Each of these members is appointed by a single partisan-controlled institution, so that the identification of the party responsible for appointing a Council member is straightforward. Furthermore, in instances where there have been majority coalitions in control of either the Senate or Sejm at the time of an appointment round, contemporary newspaper reports detail how party coalitions have divided up the available Council positions according to their respective seat-share and have agreed to
support each other’s candidates in the floor vote. Contemporary newspaper reports also state which coalition partners nominated which candidates, enabling me to code the party responsible for the appointment of each rank-and-file Council member.⁴

Appointment procedures for the NBP President are not so straightforward, since his or her appointment is subject to the agreement of the Polish President and a Sejm majority. For each NBP President appointment I therefore code appointing parties as a combination of the party with control of the Polish Presidency and majority coalition partners in the Sejm.

Table 1 presents the appointment details of each of the twenty-one individuals to have sat on the NBP Council since 1998. The first three columns list each member’s name (with ‘Ch’ indicating the member to have been NBP President and chair of the Council), along with the dates of their term on the Council. The fourth and fifth columns detail the institution (or set of institutions, in the case of the NBP President) and party responsible for appointing the member, respectively. Appointing party(s) are coded according to the scheme detailed above. Looking at the Appointing Party(s) column of Table 1, there has been variation in the party or party coalition that has appointed MPC members.

[Table 1 about here]

The final two columns of Table 1 characterize the economic policy orientation of these appointing actors in two ways. First, for each Council member I state the score of his or her appointing party(s) on the dimension of “state ownership of business and industry versus privatization” in Benoit and Laver’s (2006) expert survey of party positions. I use Benoit and Laver’s privatization dimension scores as a measure of a party’s economic stance rather than their tax/spend dimension scores. This is because, as Benoit and Laver observe,

⁴ A full list of the newspaper reports used is available on request from the author.
for post-communist countries such as Poland, compared to the tax/spending dimension the privatization dimension is “both more important overall [in terms of salience scores] and capture[s] more variation in economic policy among different parties” (2006, pp.244). These scores are measured on a scale from 1 to 20, with 20 being least favourable to state intervention in the economy. For NBP Presidents, I report the average score of the parties controlling the Presidency and the Sejm, with the Sejm parties weighted by their respective share of majority-coalition seats.

Second, in the next column I categorize the appointing party(s) for each Council member based on their economic policy scores. A member is classified as being appointed by an economically ‘Left’ party if the appointing party has an economic policy score lower than the midpoint 10.5, and by an economically ‘Right’ party if the appointing party has an economic policy score greater than the midpoint 10.5. Where Presidents are appointed by a coalition of parties where some individual parties have a score greater than 10.5, and some lower, I classify them as being appointed as a result of a left-right ‘compromise’. This classification thus corresponds directly to the appointing party economic policy scores in Table 1 for most cases, except that of Slawomir Skrzypek.

These two final columns of Table 1 show that there has been variation in the economic orientation of NBP Council members’ appointing principals. The left-right economic classifications in the final column will be used in section 5 to assess whether the revealed monetary policy preferences of NBP Council members’ are consistent with the economic policy orientation of their appointing principal.

5 Though the economic policy score for his appointing coalition is 12.17, Table 1 classifies Slawomir Skrzypek’s as being appointed as a result of a left-right compromise. This coding reflects the fact that to appoint Skrzypek the Law and Justice (PIS) party, which is measured as economically right-of-centre, required the support of two economically left-of-centre parties, Self-Defence (SRP) and League of Polish Families (LPR).

6 The economic policy score for Skrzypek’s appointing coalition is 12.17, but the final column of Table 1 classifies him as being appointed as a result of a left-right compromise. This coding reflects the fact that, in order to appoint Skrzypek, the Law and Justice (PIS) party, which is measured as economically right-of-centre, required the support of two economically left-of-centre parties in the Sejm: Self-Defence (SRP) and the League of Polish Families (LPR).
4. Estimating a statistical model of NBP Council member voting behaviour

In order to assess whether there are partisan political patterns in the voting behaviour of NBP Monetary Policy Council members, we need to systematically measure the voting behaviour of these central bankers. In this section I describe the data and model specification used to do this.

4.1 NBP voting data

The data on NBP Council voting behaviour was coded from the English version of the official voting records. These records have been published in the annex of each NBP Inflation Report since 2000. Therefore, the voting data covers all monthly Council policy meetings held between January 2000 and August 2008, a sample of 104 meetings in total.

For each Council meeting, the official voting record contains details on any proposal submitted to the Council for voting. These details include: a description of the proposal; a list of members who voted ‘yes’; and a list of members who voted ‘no’. Thus, when a proposal is voted upon, we have a set of observations on a pairwise vote between two alternatives (the proposal versus the status quo), together with information as to the character of these alternatives.

In constructing the data set I coded only those votes taken by the Council on proposals that involved changes to the NBP reference rate\(^7\) and measure each proposal in

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\(^7\) The Council also periodically voted on separate proposals concerning administrative and long-term strategic monetary policy issues, and before 2002 occasionally took separate votes on other auxiliary policy instruments (mainly the Lombard and Rediscout rates).
terms of the reference rate choice it implies. For each reference rate-related proposal, I record the new reference rate level proposed and the status quo reference rate at the start of the meeting. The vote of a Council member is coded as: 0 if he or she voted in favour of the lower rate alternative; 1 if he or she voted in favour of the higher rate alternative (regardless of whether the status quo rate was the higher or lower alternative on offer); and ‘n/a’ if he or she was not present at the meeting in which the proposal was made.

‘Multi-proposal’ meetings

In 19 meetings more than one proposal concerning the reference rate was put to vote on the Council. For these ‘multi-proposal’ meetings I treat each member’s vote on each proposal as a separate observation, since each vote on a different proposal provides extra information as to a member’s underlying rate preferences in a meeting. In all but six of the nineteen ‘multi-proposal’ meetings, the votes of each individual Council member across the different proposals were consistent with sincere voting and single-peaked preferences on the reference rate dimension. For example, a member who voted ‘yes’ for a defeated proposal to raise the reference rate by 0.50pp in a meeting also voted ‘yes’ when faced with a proposal to raise the reference rate by 0.25pp.

However, in the remaining six ‘multi-proposal’ meetings, at least one Council member votes in favour of the status quo when a proposal is made for a moderate cut in the

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8 A potential problem with this coding scheme would be that the proposals that contained changes to the reference rate also tended to contain alterations to auxiliary policy instruments (usually the Lombard rate and Rediscount rate). However, the reference rate is described by the Bank itself as the policy instrument “reflecting the current policy stance of the NBP” (National Bank of Poland, 2000 p.8) and by Kokoszczynski (2002 p.212) as the Bank’s “major instrument” for conducting monetary policy. Given the primary importance of the reference rate, it appears reasonable to assume that a Council member’s vote on the proposals in question was driven primarily by the reference rate alternatives embodied within that proposal. Furthermore, in all but 11 of the 104 meetings in the sample, any reference rate-related proposals that also contained provisions for auxiliary policy rates always specified equivalent percentage point changes to the reference rate and other auxiliary policy rates. Also, on the handful of occasions where votes were taken separately on auxiliary policy instruments, patterns of voting behaviour were the same as those for votes regarding reference rate alterations in the same meeting.

9 However, in the statistical model below, the meeting-effect term used to capture time-varying conditions are constrained to be equal for all proposals voted on in the same meeting.
reference rate but also votes in favour of a separate proposal for a more drastic cut in the reference rate. Such observations pose a problem in terms of inferring a member’s preferred reference rate in a meeting since, on face-value, he or she apparently prefers to lower the reference rate and maintain the status quo reference rate at the same time.

Examination of the voting records revealed that when a member exhibits this prima facie inconsistent behaviour, one of two situations holds. In the first, the drastic cut that the member supports is defeated by a Council majority and the moderate cut is passed despite his or her opposition. In the second situation, the moderate rate-cut proposal is defeated with the help of the member’s objection, and the proposal for a more drastic rate-cut subsequently receives support. That is, in neither situation does the member’s vote against the moderate rate-cut lead to the maintenance of the status quo reference rate as the policy-meeting outcome. Thus, I posit that in the first situation the member in fact prefers the moderate cut to the status quo reference rate, but can demonstrate his or her dissatisfaction that the more drastic cut was not undertaken by voting against the moderate rate-cut proposal in the knowledge that the moderate cut will receive majority-support. In the second situation I posit the member prefers the moderate cut to the status quo, but votes against the moderate cut in the knowledge that a more drastic cut would subsequently receive majority support. As a result, for both types of situation I code the members as supporting the moderate rate-cut proposal as well as the more drastic rate-cut proposal.

This is perhaps a strong assumption, but the reader should note that it need only be imposed for 18 observed votes cast by 5 individuals in a total of 6 meetings. Furthermore, I also re-ran the statistical analysis below on voting data where these 18 voting observations are not re-coded. The results of this analysis were substantively the same and in the same order of magnitude as those presented below.

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10 The meetings in question took place in February, June and October 2001, and January, April and May 2002.
‘No-proposal’ meetings

Finally, there are also a substantial number of Council meetings in the sample time-period where the record indicates that no proposal to change the reference rate was put to a vote. These ‘no-proposal’ meetings make up 46 of the 104 meetings observed in the sample. In all 46 of these meetings, the Monetary Policy Council maintained the reference rate at its current level. One option would be to discard these meetings as irrelevant. However, these meeting observations do contain information regarding the reference-rate preferences of Council members, to the extent that a lack of proposed alterations to the reference rate indicates that all Council members were satisfied with the current status quo reference rate. Such an interpretation seems reasonable, given that the voting records reveal there were also numerous meetings where proposals to alter the reference rate are put to the council and defeated in a majority vote.

Thus, discarding these no-proposal meeting observations may well lead to an overestimation of disagreement on the NBP Council. After all, by definition, in this set of no-proposal meetings members did not formally record disagreement with each other. This consideration is particularly important given that the focus of this paper is the extent to which the partisan background of NBP Council members is associated with heterogeneity in their preferred interest rates. A method that conservatively estimates disagreement on the NBP provides a sterner test of this proposition than one which overstates disagreement.11

Therefore, for each no-proposal meeting I code each member present at the meeting as having preferred the status quo reference rate to either a 25 basis point increase or a 25 basis point decrease in the reference rate. The two alternatives are chosen to reflect the fact that the NBP only ever alters the reference rate in discrete increments of 25 basis points or

11 An alternative approach might be to model the agenda-setting process in Council meetings. However, such an approach is beyond the confines of this paper.
multiples of this during the sample period. Further details regarding how these observations enter the statistical model are provided below.

To summarise, the NBP Monetary Policy Council voting data contains 1239 member-vote observations on 21 individuals. These are observed across 104 meetings: 46 of these are ‘no-proposal meetings’ where all members are coded as preferring the status quo reference rate; 39 of these contained a single proposal to change the reference rate; and 19 of these contained at least two proposals to change the reference rate. In total there are 79 observed pairwise votes on proposals to change the reference rate, and 46 no-proposal meeting observations which each provide a single ‘inferred’ reference rate voting observation for sitting Council members.

4.2 A model for the latent preferred reference rate of NBP Council members

The preferred NBP reference rate of member \( i \) at time \( t \) is denoted \( y_{i,t}^* \) and is modelled as

\[
y_{i,t}^* = \alpha + \eta_i + \xi_t + \varepsilon_{i,t}
\]

\( \varepsilon_{i,t} \sim \text{logistic}(0,s) \).

Thus members’ preferred policy rates are composed of a time-varying component, \( \xi_t \), a time-invariant member-specific component, \( \eta_i \), and a grand mean, \( \alpha \). The observation-specific error term, \( \varepsilon_{i,t} \), has a logistic distribution with mean zero and scale \( s \).

The time-varying component of equation (1), \( \xi_t \), captures meeting-specific conditions that influence preferred reference rates at time \( t \) and is modelled hierarchically as

\[
\xi_t \sim N(\beta_1 cpi_{t-1} + \beta_2 iip_{t-1} + \rho \text{sqr}rr_t, \omega^2), \ t = 1, \ldots, 103
\]
where \( cpi_{t-1} \) is annual national inflation measured on the consumer price index, \( iip_{t-1} \) is trend-corrected annual growth in industrial production (excluding construction)\(^{12}\) and \( sqrr_t \) is the status-quo reference rate at the start of each meeting.

The specification for the conditional mean of \( \zeta_t \) draws on Besley et al’s (2008) specification of reaction functions for individual Bank of England members: central bankers are allowed to respond systematically to inflation and growth in the manner of a Taylor rule reaction function (Taylor, 1993) augmented with the status-quo reference rate (\( sqrr_t \)) that captures monetary policy inertia. Both the annual inflation and annual production variables are lagged by one month in order to better reflect the data actually available to the Monetary Policy Council at the time of each meeting (see Sirchenko (2008) for a discussion of this in the Polish context). Maria-Dolores (2005) also finds that such a backward-looking specification for central bank behaviour best describes the interest rates set by the NBP.

In addition to this systematic relationship with observed economic conditions, the random element of \( \zeta_t \) captures un-observed meeting-specific shocks that shift preferred reference rates up or down across all Council members.\(^{13}\) The parameter \( \omega \) measures the variability of the meeting-effect about its conditional mean. Note also that \( \zeta_t \) does not contain an intercept term, as the model intercept is included at the data-level (i.e. in equation (1)) as \( \alpha \).

The member-specific component of equation (1) is simply defined as a varying intercept,

\[
\eta_i \sim N(0, \sigma^2), \quad i = 1, \ldots, 21. \tag{3}
\]

\(^{12}\) These variables were collected from the websites of the Central Statistical Office of Poland and Eurostat, respectively.
\(^{13}\) Note that the meeting-effect \( \zeta_t \) is assumed to be common across all members sitting on the Council in meeting \( t \), so the parameters capturing reactions to economic conditions (\( \beta_1, \beta_2, \) and \( \rho \)) are common across all members, while \( \omega^2 \) represents the variability of meeting-effects about this regression line. One avenue for future research may seek to relax this assumption and estimate member-varying coefficients for inflation and production.
The $\eta_i$ are the key parameters for the purposes of this paper, as each one captures the average deviation of an individual member’s preferred reference rate from the Council average, given meeting-specific effects $\zeta_t$. Note that the $\sigma$ parameter measures the extent to which there is heterogeneity in members’ preferred reference rate when faced with the same economic situation. The member-specific intercepts $\eta_i$ are used as a measure of the time-invariant relative monetary policy preference of a member.

**Modelling the link between latent preferred reference rates and observed voting records**

As discussed above, the latent preferred reference rate defined in equation (1) is not observed directly, but rather is partially observed via the voting record of Council members in each meeting. In order to make inferences about $y_{i,t}^*$ and its constituent parameters based upon NBP voting records I operationalise spatial model of voting (e.g. Hinich and Munger, 1997). To deal with the aforementioned occurrence of ‘no-proposal’ meetings, where no proposal to alter the reference rate is put forward, the link between the observed voting records and $y_{i,t}^*$ is specified in two differing forms depending on whether or not proposals were recorded in a meeting.

First, consider any meeting $t$ where the Council records indicate that one or more proposals to alter the reference rate were submitted to members and voted upon. For each meeting within this set, there may be multiple rounds of pairwise votes, so I index rounds of pairwise voting across all meetings by $j = 1, \ldots, J$, where each $j$ corresponds to one particular round of voting in one particular meeting $t$. Each unit of observation is a member’s observed vote choice $y_{i,j}$ between two observed reference rate alternatives, denoted $r^1_{j,i}$ and $r^2_{j,i}$.

---

14 Thus, though one meeting $t$ may feature a number of voting rounds, any given voting round $j$ is associated with only one meeting $t$ (i.e. $t$ is uniquely determined by $j$, though the inverse is not true). As a result, in what follows, the subscript $t(j)$ is intended to denote the meeting $t$ in which the voting round $j$ occurred.
where \( r_j^h < r_j^l \) for any pairwise voting round \( j \). Let \( y_{i,j} = 0 \) if \( i \) votes for the lower rate alternative, \( r_j^l \), and \( y_{i,j} = 1 \) if \( i \) votes for the higher rate alternative, \( r_j^h \).

I model the utility that member \( i \) derives from a given reference rate alternative \( r_j \) as a quadratic loss function that declines in the absolute distance between the reference rate alternative and member \( i \)'s latent preferred rate in the meeting where \( r_j \) is proposed,

\[
U_i(r_j) = -(y_{i,t(j)}^* - r_j)^2.
\] (4)

Thus, \( i \) votes for the higher alternative \( r_j^h \) if

\[
U_i(r_j^h) \geq U_i(r_j^l).
\]

Plugging in equations (4), then (1), and re-arranging, we can re-write this condition as

\[
-y_{i,t(j)}^* + r_j^h \geq -(y_{i,t(j)}^* - r_j^l)^2
\]

\[
y_{i,t(j)}^* \geq \frac{1}{2}(r_j^h + r_j^l)
\]

\[
\varepsilon_{i,t(j)} \geq \frac{1}{2}(r_j^h + r_j^l) - (\alpha + \eta_i + \xi_{t(j)})
\]

Further, by the definition of \( \varepsilon_{i,t} \) in (1), the probability that the condition holds is

\[
Pr \left[ \varepsilon_{i,t(j)} \geq \frac{1}{2}(r_j^h + r_j^l) - (\alpha + \eta_i + \xi_{t(j)}) \right] = Pr \left[ \varepsilon_{i,t(j)} < (\alpha + \eta_i + \xi_{t(j)}) - \frac{1}{2}(r_j^h + r_j^l) \right] = \logit^{-1} \left[ \frac{(\alpha + \eta_i + \xi_{t(j)}) - \frac{1}{2}(r_j^h + r_j^l)}{s} \right]
\]

Thus the probability that member \( i \) votes for the higher reference rate alternative can be modelled in terms of the binary logistic regression

\[
Pr[y_{i,j} = 1] = \logit^{-1} \left[ \frac{(\alpha + \eta_i + \xi_{t(j)}) - \frac{1}{2}(r_j^h + r_j^l)}{s} \right].
\] (5)

Usually for models of binary choice, the latent threshold parameter (above which a realization of the unobserved latent dependent variable must fall in order to observe a one
rather than a zero on the observed binary dependent variable) is a parameter to be estimated. However, the term for the latent threshold in equation (5) - i.e. the term $\frac{1}{2}(r^h + r^l)$ - is observed in the data as the numerical midpoint between the two reference rate alternatives. That is, in the parlance of spatial voting and ideal point estimation, we can directly measure the ‘cutpoint’ between any two alternatives being voted upon on an interest rate metric. This is analogous to the situation exploited by Krehbiel and Rivers (1988) in their study of minimum-wage voting in the US Congress. As they note, such information identifies the latent scale of the choice model, allowing the researcher to make meaningful statements about the magnitude of latent parameters. In the application presented here, the scale of the latent parameters is defined in terms of reference rate percentage points.

Now, consider any meeting $t$ where the Council records indicate that no proposal to alter the reference rate was voted upon by members. For each meeting $t$ within this second no-proposal set, there is only one observation of each current NBP Council member per meeting. I label each of these member-meeting observations a ‘no-proposal observation’. I assume that where a no-proposal observation occurs, the latent reference rate, $y^*_i$, of member $i$ at meeting $t$ satisfies

$$(sqr_{t} - 0.125) \leq y^*_i < (sqr_{t} + 0.125).$$

The terms on far left and far right hand-side of (6) correspond, respectively, to the midpoint between the status quo reference rate and an alternative that is 0.25 percentage points lower, and the midpoint between the status quo reference rate and an alternative that is 0.25 percentage points greater. Thus equation (6) represents a situation where $i$’s latent preferred reference rate is closer to the status quo rate than to either of the closest possible alternative reference rate settings (provided interest rates are altered only in 0.25 percentage points.

---

15 It also allows the estimation of the latent residual-variance parameter $s$, which normally has to be fixed ex ante for purposes of identification.
increments or multiples of this, as is standard currently in monetary policy). In other words, I assume that if no proposals are observed in a meeting, then all members sitting on the Council in that meeting preferred the status quo reference rate \( s_q r r_t \) to either a decrease of 0.25 or an increase of 0.25 in the rate. The probability of such a condition being satisfied can be expressed in terms of the parameters used to model the latent preferred reference rate:

\[
Pr[\text{no-proposal observation}] = \logit^{-1}\left[\frac{(s_q r r_t + 0.125) - (\alpha + \eta_i + \zeta_t)}{s}\right] - \logit^{-1}\left[\frac{(s_q r r_t - 0.125) - (\alpha + \eta_i + \zeta_t)}{s}\right].
\] (7)

4.3 Estimation

Equations (2), (3), (5) and (7) jointly define my statistical model of NBP Council voting. I estimate this model using Bayesian MCMC (Markov Chain Monte Carlo) methods, whereby an MCMC sampler iteratively updates the estimates of the model parameters. After a sufficient number of iterations (or burnin period) the vector of parameter estimates yielded during a given iteration represents a draw from the joint posterior distribution of the model parameters.\(^{16}\) This posterior distribution “summarizes our information about the parameters having observed the data” (Clinton et al. 2004, pp.357). Because the MCMC method yields a sample from the posterior distribution of all parameters in the statistical model, it is straightforward to make statistical inferences about any auxiliary quantity of interest that is a function of the model parameters. The posterior distribution of the auxiliary quantity can be generated by calculating and storing its value for each sampled vector of model parameters (Trier and Jackman, 2008 p.210). This feature of MCMC estimation is particularly useful for

\(^{16}\) For more details see Jackman (2000), Gelman et al. (2003) or Gill (2008).
the purposes of this paper. For example, it allows us to examine the posterior distribution of the position of the pivotal voter on the NBP Council.

In specifying priors for the model parameters I endeavoured to keep these priors uninformative and let the data speak. However, in order to run the MCMC sampler efficiently and avoid crashes, the priors for some parameters were narrowed to restrict resulting estimates to a reasonable range. In these cases, priors were based on trial runs of the sampler. For the uniform priors for variance parameters, I was careful to check that the marginal posterior density of these parameters did not place any substantial probability weight close to the prior bounds. Specifically, the priors for the model parameters were set as follows:

$$\alpha \sim N(0, 1)$$
$$\beta_1 \sim N(0, 1)$$
$$\beta_2 \sim N(0, 1)$$
$$\rho \sim Unif(-0.999, 0.999)$$
$$\omega \sim Unif(0, 0.5)$$
$$\sigma \sim Unif(0, 0.5)$$
$$s \sim Unif(0, 1)$$

The MCMC sampler was run in JAGS from R using the rjags package (Plummer, 2009). Initial values for model parameters were based on the results of previous trial runs of the sampler. A single chain was run for 750,000 iterations, with the first 250,000 discarded as burnin. The chain was thinned by a factor of 25, leaving a sample of 20,000 draws from the posterior distribution to be used for inference. Standard convergence tests recommended by Gill (2008, p.459-489) showed no indication of non-convergence in any parameter estimates, and that the chain had run for a satisfactory number of iterations to make reliable inferences regarding the 95 per cent credible interval of model parameters.
When estimating the model I had to drop voting observations for January 2000, because at present I cannot obtain the value of lagged annual CPI inflation for this month. Therefore, the model is estimated based on voting observations in 103 NBP Council meetings.

*Model estimates*

Before examining estimated member-specific intercepts in the next section, the remainder of this section discusses the overall results for the hierarchical model of NBP Council voting. First, the fit of the model seems relatively good. With a classification threshold of 0.5 the model correctly classifies 89.9 of observed-proposal voting observations.

Table 2 summarises the results for the model. The first column of Table 2 contains the mean of the marginal posterior density for each parameter, while the second column contains corresponding 95 per cent credible intervals.

![Table 1 about here](image)

The parameter estimates for $\beta_1$ and $\beta_2$, which measure the average response of NBP members’ preferred reference rates to increases in inflation and output respectively, are positive and statistically distinguishable from zero according to 95 per cent credible intervals. This is consistent with a Taylor Rule-type reaction function where central bankers tighten monetary policy in order to mitigate increases in inflation and output, and vice versa. The estimate for $\rho$ indicates high inertia in reference rates, though it is statistically distinguishable from unity according to its 95 per cent credible interval.

Looking at the estimates for the variance parameters, we see that the magnitude of the variation of meeting-effects about their conditional mean (a linear function of observed
economic variables) is reasonably large in substantive terms: \( \omega \), the standard deviation of meeting-effects about their conditional mean, has a posterior mean of 0.21 reference rate percentage points. Furthermore, the magnitude of the variation in member-specific intercepts appears to be substantively significant: \( \sigma \), the standard deviation of member-specific intercepts about their mean value (which is constrained to zero in the model), has a posterior mean of 0.08 reference rate percentage points. In the next section I turn to look at these estimated member intercepts in more detail, examining whether they are consistent with the partisan background of NBP appointees.

5. Partisan appointments and NBP member revealed monetary policy preferences

In this section I test for partisan patterns in appointments to the NBP Council. To do this I use the estimated member-specific intercepts from the reference rate voting model estimated in the previous section as a measure of appointees’ revealed monetary policy preferences.

Patterns in revealed monetary policy preferences

Before assessing whether partisan patterns exist, Figure 1 simply plots the revealed monetary policy preferences for each of the twenty-one NBP Council members since 1998. These are the estimated member-specific intercepts, or \( \eta_i \) terms, in the latent preferred reference rate model described in the section 4. Recall that these member intercepts represent the average differences in the latent preferred reference rate of different Council members when faced with the same economic conditions. Member-specific intercepts are measured on a reference rate scale and are zero-centred, since they represent deviations from the Council’s mean response to economic conditions. The points in Figure 1 represent the median of the
posterior density for the member-specific intercept, while the thick and thin black lines represent the fifty per cent and ninety-five per cent credible intervals for each member effect, respectively.

[Figure 1 about here]

Figure 1 suggests that, controlling for economic conditions, there is substantively meaningful heterogeneity across Council members in terms of preferred reference rates. For example, it suggests that on average, Miroslaw Pietrewicz prefers a reference rate approximately 20 basis-points lower than Marek Dabrowski. Furthermore, comparing marginal ninety-five per cent credible intervals, the eight members with the lowest estimated member-specific intercepts are statistically distinguishable from the eight members with the highest estimated member effects.

But do the revealed monetary policy preferences of NBP Council members’ exhibit patterns consistent with partisan appointments? Figure 2 allows us to begin to assess this question. It again graphs mean revealed monetary policy preference of each Council member, together with ninety-five per cent credible intervals. But it also indicates the left-right economic policy classification of the political party or party coalition responsible for appointing each Council member, as coded in Table 1.

[Figure 2 about here]

Figure 2 provides some support for a partisan theory of NBP Council appointments. First, those members appointed by parties that are left-of-centre on economic policy tend to prefer a reference rate that is lower than those members appointed by parties that are right-of-centre
on economic policy. Five of the six members appointed by economically right-of-centre parties have a median estimated member effect that is lower than all twelve members appointed by economically left-of-centre parties. That is, faced with similar economic conditions, right-of-centre party appointees to the NBP Council tend to prefer higher reference rate than left-of-centre party appointees to the NBP Council.

However, Figure 2 also shows that the remaining right-of-centre appointee, Janusz Krzyzewski, has a median estimated intercept lower than that of four left-of-centre appointees. Furthermore, the average latent preferred reference rate of four left-of-centre party appointees (namely, Filar, Noga, Wasilewska-Trenkner and Wojtyna) are statistically indistinguishable from the right-of-centre appointees in terms of ninety-five per cent credible intervals. These qualifications to the general observed pattern are consistent with the contention of Lohmann (1997) and Morris and Keech (1997) that political parties face the possibility that appointee’s may not turn out to be ‘perfect agents’ once on the Council.

Further examination of Figure 2 reveals some other noteworthy results. Consistent with partisan appointments, two of the NBP Presidents that were appointed as a result of bargaining between left-of-centre and right-of-centre parties (Gronkiewicz-Waltz and Balcerowicz) are estimated to be relatively centrist in terms of average relative preferred reference rate. However, Skrzypek’s revealed preference for a relatively low reference rate might be something of a surprise, given that he is also classed as being appointed as a result of bargaining between left-of-centre and right-of-centre parties. Given the relative strength of the PIS party in Skrzypek’s appointing coalition (PIS held the Polish Presidency and were the largest party in the Sejm majority coalition) and the right-of-centre economic policy score they are assigned in Table 1, the partisan appointments logic would lead us to expect relatively restrictive monetary policy preferences for Skrzypek. It may be that the true economic policy stance of the PIS is inadequately measured in Table 1. However, taking
these measures as given for the purposes of this paper, we must deem Skrzypek’s estimated monetary policy preferences to represent another qualification to the general support for partisan appointments in the data.

Appointing party and average differences in revealed monetary policy preferences

I also conduct a more formal statistical test for partisan appointments to the NBP Council. To do this, I examine the posterior density of the difference between the mean member-specific intercept of left-party appointees and the mean member-specific intercept of right-party appointees.

It is relatively straightforward to generate this posterior density from the MCMC sample generated during model estimation, since that sample represents 20,000 draws from the joint posterior density of the model parameters. Specifically, for each draw $k$ from the joint posterior density, $k = 1, ..., 20,000$: first, take the twenty-one $\eta_i$ values drawn at $k$ for all NBP Council members; second calculate $\text{meanleft}_1$, the mean of the $\eta_i$ values drawn at iteration $k$ for all left-of-centre party Council appointees; third, calculate $\text{meanright}_1$, the mean of the $\eta_i$ values drawn at iteration $k$ for all right-of-centre party Council appointees; finally, store the value of the difference $\text{meanleft}_1 - \text{meanright}_1$. This yields 20,000 samples from the posterior density of $\text{meanleft}_1 - \text{meanright}_1$. I also generated a sample from the posterior density of $\text{medleft}_1 - \text{medright}_1$, the difference between the median member-specific intercept of left-party appointees and the median member-specific intercept of right-party appointees.

It is necessary to check that this test is robust to the economic left-right coding of Skrzypek’s appointing coalition, which as discussed in section 3 is not straightforward. Therefore, I repeated the above procedures, but included Skrzypek as a right-of-centre party appointee rather than classifying him as left-right compromise (reflecting the possible weight
of the PIS in his appointment). The resulting quantities are labelled $mean_{left}2 - mean_{right}2$ and $med_{left}2 - med_{right}2$.

Figure 3 provides a summary of the posterior density of all four measures of the difference between the latent preferred reference rates of NBP Council members appointed by economically left-of-centre and right-of-centre parties. These measures are all on a reference rate scale. Again, the point represents the median of the posterior density, and the thick and thin lines the fifty per cent and ninety-five per cent credible intervals, respectively.

[Figure 3 about here]

Examination of Figure 3 shows that according to all four measures, the difference in the latent preferred reference rate of left-of-centre and right-of-centre Council appointees is clearly distinguishable from zero and of the expected sign. For example, there is a ninety-five percent posterior probability that the measure $mean_{left1} - mean_{right1}$ lies between $-0.13$ and $-0.08$. That is, controlling for economic conditions, an NBP Council member appointed by a economically left-of-centre party can be expected to have a latent preferred reference rate that is between 13 and 8 basis points lower than an NBP Council member appointed by an economically right-of-centre party. Thus, this more formal test provides clear evidence for partisan appointments to the NBP Council.

**Appointments and shifts in the position of the pivotal voter on the NBP Council**

But to what extent did the ability to appoint NBP Council members allow Polish political parties the opportunity to influence monetary policy outcomes? It may be that politicians rationally appoint individual central bankers who have similar monetary policy preferences to
themselves, but that they are unable to alter the preferred monetary policy of the pivotal voter on a central bank committee (Krehbiel, 2007; Rohde and Shepsle, 2007). In order to address this issue, I use my reference rate voting model estimates to assess changes in the monetary policy preferences of the pivotal voter on the NBP Council over time.

Again using the MCMC sample produced during model estimation, I generate the posterior density of the change in the position of the pivotal voter on the NBP Council following appointments. The position of the pivotal voter on the Council for a given composition of ten members is measured as follows. For a given draw $k$ from the joint posterior density of the reference rate voting model parameters, take the ten $\eta_i$ values drawn at $k$ that correspond to the ten individuals that make up the Council composition. The NBP President has the casting vote in the event of a tie on the Council, which is equivalent to the NBP President having two votes on the Council. Therefore count his or her $\eta_i$ value drawn at $k$ twice, so that there are effectively eleven $\eta_i$ values. Now, arrange all eleven $\eta_i$ values and store the median value. When this process is repeated across all 20,000 MCMC draws, the resulting vector of length 20,000 represents a sample from the posterior density of the position of the pivotal voter on the Council.

I classify three general ‘appointment episodes’ that have occurred since February 1998, when the inaugural Monetary Policy Council first sat. This inaugural Council consisted of six appointees from economically right-of-centre parties, three appointees from economically left-of-centre parties, and one left-right compromise appointee (Gronkiewicz-Waltz). The first appointment episode occurred in January 2001, when NBP President Gronkiewicz-Waltz (who had resigned) was replaced by Balcerowicz, another left-right compromise appointee. The second appointment episode occurred between August 2003 and February 2004 and involved nine appointments to the Council. During this second episode, the six-year terms of the nine initial rank-and-file Council members ended allowing the
economically left-of-centre SLD and PSL the opportunity to appoint nine new Council members (the start-date for this episode is August 2003 because the death of Krzyzewski in this month led to the temporary appointment of Czekaj by the SLD, who was re-appointed for a full six year term in January 2004). The third appointment episode occurred in January 2007, when the Balcerowicz’s term as NBP President ended and Skrzypek was appointed to replace him by a coalition of the economically right-of-centre PIS party and the left-of-centre SLP and PLR parties.

Figure 4 summarizes the posterior density of the change in the monetary policy preference of the pivotal voter on the NBP Council following each of these three appointment episodes. These measures are all again on a reference rate scale. Again, the point represents the median of the posterior density, and the thick and thin lines the fifty per cent and ninety-five per cent credible intervals, respectively.

[Figure 4 about here]

Figure 4 provides qualified support for a theory of partisan appointments to the NBP Council. First, there appears to have been no distinguishable change in the position of the pivotal voter on the Council resulting from the replacement of Gronkiewicz-Waltz with Balcerowicz. This is in line with a logic of partisan appointments, since both were appointed by the same coalition of parties.

Second, according to Figure 4 the replacement of nine members between August 2003 and February 2004 appears to have produced a negative shift of approximately 4 reference rate basis points in the monetary policy preference of the pivotal voter on the Council. This is again in line with a logic of partisan appointments, since this appointment involved the replacement of six economically right-of-centre appointees and three economically left-of-
centre appointees with nine economically left-of-centre appointees. The partisan appointment logic would predict a negative change in the position of the pivotal Council voter in this situation.

Note however, that though the change in the position of the pivotal voter is in the expected direction and is marginally distinguishable from zero in terms of its ninety-five per cent credible interval, it is also relatively small in substantive magnitude. This suggests that politicians may be relatively constrained in their ability to move the pivotal voter on the NBP Council. One important constraint likely stems from the fact that the NBP President, who has disproportionate voting powers on the Council, is appointed according to a different procedure and happens to follow a different appointment cycle to rank-and-file Council members. As a result of this, during the August 2003 to February 2004 appointment episode the left-of-centre SLD/PSL coalition did not have the opportunity to replace the sitting NBP president and so a left-right compromise appointee continued to effectively exercise two votes on the Council. If one considers that this institutional constraint operates in addition to the aforementioned inability of parties to appoint perfect agents to the Council, then the small shift in the position of the pivotal voter on the Council during this appointment episode is less surprising. Thus this result can perhaps be interpreted as evidence that institutional design – here, staggered appointments and disproportionate voting power - can work to condition the impact of political appointments on monetary policy committees, even in the presence of partisan motivations (Lohmann, 1997; Morris, 2000). More generally, this finding accords with theoretical work suggesting that appointments to multi-member decision-making committees can only have a limited impact on the pivotal voter (Krehbiel, 2007; Rohde and Shepsle, 1997).

Third, according to Figure 4, the replacement of Balcerowicz by Skrzypek as NBP President in January 2007 produced a surprising negative shift in the monetary policy
preference of the pivotal voter on the NBP Council. This shift is at odds with the logic of partisan central bank appointments, though is unsurprising when we look at Skrzypek’s relatively dovish monetary policy preference estimate in Figure 1. Given the measures of party’s economic policy stance used here, the partisan appointments logic would predict that the pivotal voter on the Council should have remained relatively unchanged after this appointment. This result thus represents another qualification to the general support for partisan appointments in the data. Generally, it appears that Skrzypek’s appointment is an important outlier to a trend that is mostly consistent with partisan appointments. It may be that alternative political considerations drove the appointment of Skrzypek, or it may be that my measure of the economic policy preferences of Skrzypek’s appointing coalition is misleading. The use of alternative measures of the economic policy preferences of parties would enable me to disentangle these two possibilities, and I plan to attempt this.

6. Conclusion

This paper has examined whether, in the context of a legally independent central bank, politicians attempt to exert an indirect partisan influence on monetary policy through central bank appointments. To do this it has analysed appointment and voting patterns in the previously unstudied case of the Monetary Policy Council of the National Bank of Poland. The Polish case provides an opportunity for a relatively clean test of the behavioural assumption underlying theories of partisan central bank appointments: specifically, that compared to parties to left-wing economic policy preferences, parties with more right-wing economic policy preferences seek to appoint central bankers who prefer a relatively restrictive monetary policy.
To test this assumption, I coded a new dataset on monetary policy voting behaviour in the NBP Council. I then derived and estimated a novel Bayesian hierarchical choice model to measure the revealed monetary policy preferences of Council members based on their relative voting behaviour. These measures, together with measures of the economic policy preferences of appointing actors, were used to assess whether the revealed monetary policy preferences of Council members were consistent with the logic of partisan central bank appointments.

My results provide qualified evidence of partisan appointments to the NBP Council. First, in line with the partisan appointments logic, Polish central bankers appointed by parties with right-of-centre economic policy preferences tended to prefer a more restrictive monetary policy. Controlling for economic conditions, right-of-centre Council appointees on average preferred a reference rate that is approximately ten basis points higher than left-of-centre appointees. Such differences are substantively meaningful in terms of their magnitude. Thus this paper provides support for the partisan theory of central bank appointments, and the motivational assumptions of partisan business cycle theories more generally.

Second, I found heterogeneity in the revealed monetary policy preferences of both right-of-centre and left-of-centre Council appointees, and individuals appointed as a result of a left-right compromise. One particularly prominent outlier from this general pattern was the current NBP President, Slawomir Skrzypek. Thus it appears that central bankers are not perfect agents of their political principals, even in the Polish context where parties are relatively unconstrained in most appointments.

Third, examination of changes in the policy preference of the pivotal voter on the NBP Council suggests that politicians have been able to move the pivotal voter on the Council, but that their ability to do so has been limited. In two of the three main appointment episodes examined since 1998, the change (or lack of change) in the preference of the pivotal
voter on the Council are consistent with the partisan appointments logic. However, where the preference of the pivotal voter changes, the magnitude of the change is small substantively. Possible reasons for the limited impact on the position of pivotal voter may include: the inability of parties to appoint perfect agents to the Council; or the specific institutional context of the NBP Council, where the NBP President holds disproportionate voting power and happens to be appointed according to a different cycle than that of rank-and-file Council members. This relates to the central bank independence literature. Even though politicians seek to make partisan appointments, their inability to appoint perfect agents, together with institutional features such as different appointments cycles for key committee positions, appear to insulate monetary policy from political influence to some extent.
References


**Table 1:**

Summary of NBP Monetary Policy Council members, 2000-2008

<table>
<thead>
<tr>
<th>NBP Council Member</th>
<th>First Meeting</th>
<th>Last Meeting</th>
<th>Appointing Institution(s)</th>
<th>Appointing Party(s)</th>
<th>Party L-R Economic Score of Appointing Party(s)</th>
<th>L-R Economic Classification of Appointing Party(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dariusz Kajetan Rosati</td>
<td>Feb-98</td>
<td>Jan-04</td>
<td>Pres</td>
<td>SLD</td>
<td>8.27</td>
<td>Left</td>
</tr>
<tr>
<td>Grzegorz Wojtowicz</td>
<td>Feb-98</td>
<td>Jan-04</td>
<td>Pres</td>
<td>SLD</td>
<td>8.27</td>
<td>Left</td>
</tr>
<tr>
<td>Wieslawa Ziolkowska</td>
<td>Feb-98</td>
<td>Jan-04</td>
<td>Pres</td>
<td>SLD</td>
<td>8.27</td>
<td>Left</td>
</tr>
<tr>
<td>Hanna Gronkiewicz-Waltz (Ch)</td>
<td>Feb-98</td>
<td>Dec-00</td>
<td>Pres &amp; Sejm</td>
<td>SLD &amp; (AWS, UW)</td>
<td>10.60</td>
<td>L-R Compromise</td>
</tr>
<tr>
<td>Janusz Krzyzewski</td>
<td>Feb-98</td>
<td>Jul-03</td>
<td>Sejm</td>
<td>AWS</td>
<td>11.76</td>
<td>Right</td>
</tr>
<tr>
<td>Jerzy Pruski</td>
<td>Feb-98</td>
<td>Dec-03</td>
<td>Sejm</td>
<td>AWS</td>
<td>11.76</td>
<td>Right</td>
</tr>
<tr>
<td>Marek Dabrowski</td>
<td>Feb-98</td>
<td>Jan-04</td>
<td>Sejm</td>
<td>UW</td>
<td>16.81</td>
<td>Right</td>
</tr>
<tr>
<td>Boguslaw Grabowski</td>
<td>Feb-98</td>
<td>Dec-03</td>
<td>Senate</td>
<td>AWS</td>
<td>11.76</td>
<td>Right</td>
</tr>
<tr>
<td>Cezary Jozefiak</td>
<td>Feb-98</td>
<td>Dec-03</td>
<td>Senate</td>
<td>UW</td>
<td>16.81</td>
<td>Right</td>
</tr>
<tr>
<td>Wojciech Laczkowski</td>
<td>Feb-98</td>
<td>Dec-03</td>
<td>Senate</td>
<td>AWS</td>
<td>11.76</td>
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<tr>
<td>Leszek Balcerowicz (Ch)</td>
<td>Jan-01</td>
<td>Dec-06</td>
<td>Pres &amp; Sejm</td>
<td>SLD &amp; (AWS, UW)</td>
<td>10.60</td>
<td>L-R Compromise</td>
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<tr>
<td>Jan Czekaj*</td>
<td>Aug-03</td>
<td></td>
<td>Sejm</td>
<td>SLD</td>
<td>8.27</td>
<td>Left</td>
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<tr>
<td>Mirosław Pietrewicz</td>
<td>Jan-04</td>
<td></td>
<td>Sejm</td>
<td>PSL</td>
<td>7.42</td>
<td>Left</td>
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<td>Halina Wasilewska-Trenkner</td>
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<td></td>
<td>Senate</td>
<td>SLD</td>
<td>8.27</td>
<td>Left</td>
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<tr>
<td>Marian Noga</td>
<td>Jan-04</td>
<td></td>
<td>Senate</td>
<td>SLD</td>
<td>8.27</td>
<td>Left</td>
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<tr>
<td>Stanisław Owsik</td>
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<td>Senate</td>
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<td>Left</td>
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<tr>
<td>Andrzej Sławinski</td>
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<td>SLD</td>
<td>8.27</td>
<td>Left</td>
</tr>
<tr>
<td>Andrzej Wojtyna</td>
<td>Feb-04</td>
<td></td>
<td>Pres</td>
<td>SLD</td>
<td>8.27</td>
<td>Left</td>
</tr>
<tr>
<td>Dariusz Filar</td>
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<td>Pres</td>
<td>SLD</td>
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<td>Left</td>
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<tr>
<td>Stanislaw Nieckarz</td>
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<td>Sejm</td>
<td>SLD</td>
<td>8.27</td>
<td>Left</td>
</tr>
<tr>
<td>Slawomir Skrzypek (Ch)</td>
<td>Jan-07</td>
<td></td>
<td>Pres &amp; Sejm</td>
<td>PIS &amp; (PIS, SRP, LPR)</td>
<td>12.17</td>
<td>L-R Compromise</td>
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</table>

*Source:* Appointment details collected from NBP website and contemporary newspaper reports. Party left-right economic scores based on the privatization dimension scores in Benoit and Laver’s (2006) expert survey data. Party left-right economic classifications based on author’s own coding, described in main text.

*Party key:* AWS = Solidarity Electoral Action, LPR = League of Polish Families, PIS = Law and Justice, Union

PSL = Polish Peasants’ Party, SLD = Democratic Left Alliance, SRP = Self-Defence of the Republic of Poland, UW = Freedom Union.

* Czekaj appointed to fill temporary vacancy caused by death of Krzyzewski, and is subsequently appointed for second term. Though NBP Council membership is generally non-renewable, members can be re-appointed if initially appointed to serve out his or her predecessor’s term.
### Table 2

Summary of parameter estimates for NBP hierarchical voting model

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Posterior Mean</th>
<th>95% Credible Interval</th>
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</thead>
<tbody>
<tr>
<td>$\alpha$</td>
<td>-0.08</td>
<td>[-0.22, 0.06]</td>
</tr>
<tr>
<td>$\beta_1$</td>
<td>0.10</td>
<td>[0.07, 0.13]</td>
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<tr>
<td>$\beta_2$</td>
<td>0.02</td>
<td>[0.01, 0.03]</td>
</tr>
<tr>
<td>$\rho$</td>
<td>0.94</td>
<td>[0.93, 0.96]</td>
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<tr>
<td>$\omega$</td>
<td>0.21</td>
<td>[0.18, 0.24]</td>
</tr>
<tr>
<td>$\sigma$</td>
<td>0.08</td>
<td>[0.05, 0.11]</td>
</tr>
<tr>
<td>$s$</td>
<td>0.03</td>
<td>[0.027, 0.034]</td>
</tr>
</tbody>
</table>

Total N: 1229  
Members: 21  
Meetings: 103 (incl. 45 no-proposal meetings)  
Voting rounds: 125 (incl. 45 no-proposal meetings)
Figure 1

Estimated NBP Member-Specific Intercepts

Marek Dabrowski
Jerzy Pruski
Cezary Jozeifiak
Wojciech Laczkowski
Boguslaw Grabowski
Dariusz Filar
Marian Noga
Halina Wasilewska-Trenkner
Leszek Balcerowicz (Ch)
Hanna Gronkiewicz-Waltz (Ch)
Andrzej Wojtyna
Janusz Krzyzewski
Andrzej Slawinski
Jan Czekaj
Stanislaw Owsiak
Dariusz Kajetan Rosati
Stanislaw Nieckarz
Wieslawa Ziolkowska
Grzegorz Wojtowicz
Miroslaw Pietrewicz
Slawomir Skrzypek (Ch)

Reference Rate

-0.2  -0.1   0.0   0.1   0.2

50% CI
95% CI
Estimated NBP Member-Specific Intercepts by Appointing Party

- Marek Dabrowski
- Jerzy Pruski
- Cezary Jozeﬁak
- Wojciech Laczkowski
- Boguslaw Grabowski
- Dariusz Filar
- Marian Noga
- Halina Wasilewska-Trenkner
- Leszek Balcerowicz (Ch)
- Hanna Gronkiewicz-Waltz (Ch)
- Andrzej Wojtyna
- Janusz Krzyzewski
- Andrzej Slawinski
- Jan Czekaj
- Stanislaw Owaik
- Dariusz Kajetan Rosati
- Stanislaw Niecarz
- Wieslawa Ziołkowska
- Grzegorz Wojtowicz
- Miroslaw Pietrewicz
- Sławomir Skrzypek (Ch)

Reference Rate

- ▲: Right Party
- ■: Left Party
- ○: Left-Right Compromise
Figure 3

Average differences in revealed monetary policy preferences by appointing party

Note: for details of the variable construction, see text (page 29).
Figure 4

Confidence intervals for difference in NBP median after key appointment episodes

January 2001
Balcerowicz replaces Gronkiewicz-Waltz as President.

August 2003 – February 2004
Nine new left-party appointees replace six right-party and three left-party appointees.

January 2007
Skrzypek replaces Balcerowicz as President.