SELECT YOUR COMMITTEE:
THE IMPACT OF CENTRAL BANKERS'
BACKGROUND ON INFLATION

Étienne Farvaque, Hakim Hammadou & Piotr Stanek[1]

ABSTRACT. This paper examines the influence of the biographical experience of monetary policy committee members on their inflation performance. Our sample covers major OECD countries in the 1999 to 2008 period. The results show that policy makers' backgrounds influence inflation. The professional background of monetary policy committees' members proves important, private sector members, academics and central banks' insiders being better in controlling inflation. Gender also reveals important, with women appearing more hawkish than male central bankers. Finally, the size of the monetary policy committees matters and non-linear effects are found.

JEL Classification: E58.
Keywords: Central banking; Committees; Inflation; Governance.

RÉSUMÉ. Cet article étudie dans quelle mesure l'expérience pratique acquise en matière de politique monétaire par les membres des comités des banques centrales influence leur résultat en matière de lutte contre l'inflation. L'échantillon choisi couvre les grands pays de l'OCDE pour la période 1999-2008. Les résultats indiquent que l'acquis professionnel des décideurs politiques a un effet sur l'inflation. Cet acquis est significatif, les membres venant du secteur privé, les universitaires et les professionnels des banques centrales étant plus performants dans la lutte contre l'inflation. Le sexe se révèle aussi important, les femmes se révélant plus « faucon » que les banquiers centraux masculins. Enfin, la taille des comités de politique monétaire importe aussi, et des effets non-linéaires peuvent être mis en évidence.

Classification *JEL* : E58.
Mots-clefs : Banque centrale ; comités ; inflation ; gouvernance.

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1. Corresponding author: Etienne FARVAQUE, Maître de conférences, Equippe, Faculté des Sciences Économiques et Sociales, Université de Lille 1 (etienne.farvaque@univ-lille1.fr).
Hakim HAMMADOU, Maître de conférences, Equippe, Faculté des Sciences Économiques et Sociales, Université de Lille 1 ; Piotr STANEK, Assistant Professor at Cracow University of Economics (Poland).

1. INTRODUCTION

Governance structures have large consequences on macroeconomic performances, this is no longer disputed. But details of the governance structures still are in the shadows, which may be surprising as it is precisely in the details where the devil generally lies. In this paper, we focus on one aspect of these governance structures details: central banks' monetary policy committees (MPC). More precisely, the aim of this paper is to empirically assess the impact of monetary policy committees' compositions on central banks' inflation performance.

Though the literature studying monetary policy institutions with a focus on the decision-making mechanisms and the decision-makers themselves is growing, the empirical approach to assess boards' performance has so far logically been mainly focused on firms' boards of directors. Sources of this research can be traced back to Berle and Means' (1932) explanation of the separation of the property and control as a result of corporation growth and development of the markets, with control being delegated to independent directors into the boards. The hypothesis that independent directors act as guardians of the shareholders' interests has been formally derived (see Fama and Jensen's 1983 seminal paper) and tested empirically. A typical example is Rosenstein and Wyatt (1997)'s study, finding that the appointment of an outsider increases the firm's value. This literature has also looked at the influence of the individual characteristics (age, professional experience or education) of committee members on the collective performance of the board. For example, Jensen and Zajac (2004) highlight the importance of considering how both demography and position affect the relationship between corporate elites and corporate strategy, showing that corporate elites influence corporate strategies, "above and beyond economic factors such as prior performance, resource scarcity, and firm size".

Given the importance of the topic (and results) in the corporate governance and management literatures, it is not surprising that monetary economists recently invested it, with central banks as their targets. Several papers have looked at how central banks' monetary policy committees operate, and have shown that personal features of the monetary policy committees' members may have an influence on the performance of a central bank's monetary policy. Most of these papers are theoretical (see e.g. Matsen and Røisland, 2005; Sibert, 2005; Farvaque *et al.*, forthcoming) but some of them deal with empirics. Most of the existing evidence studies the Federal Open Market Committee (FOMC) of the Federal Reserve of the United States (see Blinder, 2004; Chappell *et al.*, 2005; or Meade, 2005, Meade and Stasavage, 2008), though Riboni and Ruge-Murcia (2008) focus on the Bank of England. To our knowledge, the only paper to include several central banks is Göhlmann and Vaubel's (2007).

It has to be recognized that the empirical literature evolved in two steps. In the first, the influence of demographical factors has been hinted to, more than systematically studied. For example, Chappell and McGregor (2000) remark that women could more often been qualified as doves, rather than hawks. And Havrilesky (1993) notifies a "widely reported" division in the voting behavior of FOMC members between Federal Reserve Bank Presidents and Board of Governors. As a group, Federal Reserve Bank Presidents are more likely to vote for tighter

monetary policy, and Governors for looser monetary policy, something which Havrilesky attributes to the average career experience (in private industry) and educational background (generally without PhD) of Fed Bank Presidents. And Meade and Sheets (2002) remark that regional considerations seem to have a role when policymakers decide. Moreover, they argue that the influence of economic situation in the home region may be important not only for regional FRB Presidents, but also for the members of the Board of Governors of the Federal Reserve System. Thus, for federal-type central banks (like the Fed or the ECB) the region of origin of decision makers is a potentially important variable.

The second step is growing rapidly, and is characterized by more systematic studies of demographic factors. Dreher *et al.* (2009) look at the influence of professional and educational backgrounds on heads of governments' enthusiasm for market-liberalizing reforms, and show their relevance. Concerning central banking, Kuttner and Posen (2007) assess the effects of central bankers' appointment announcement on financial markets, and find significant reactions of exchange rates and bond yields. Moser and Dreher (2007) study emerging countries and find that the replacement of a central banker negatively affects financial markets when the change is irregular, though in their sample personal characteristics of the central banker matter less. Finally, Gölhmann and Vaubel (2007), whose work is the closest to the present one, lead a panel data analysis on 11 countries during 28 years (1973-2000) plus the ECB (1999-2003). They find that professional background is important for the inflation performance – central bankers being the most hawkish members of monetary policy councils, trade unionists and politicians being the most dovish ones.

Though this latest study is the closest to ours in scope, there are some important differences. First, our dataset consists of nine central banks from major OECD countries and 175 central bankers, all considered during the period 1999-2008. Hence, this paper deals with the influence of biographical factors under comparable institutions and in a period where all central banks have achieved relatively low and stable inflation levels. Moreover, politicians and trade unions leaders no longer fill central bank boards, i.e. contemporary MPC members are less and less appointed from outside the economic world. Thus, an assessment focused on the most recent tendencies in appointed monetary policy committees is necessary.

The paper is organized as follows. Section 2 presents the dataset. Section 3 presents the methodology and discusses the empirical results. The conclusion follows.

2. THE DATASET

The dataset covers the nine most important central banks (as in Eijffinger and Geraats, 2006): the European Central Bank (ECB), the Reserve Bank of Australia (RBA), the Bank of Canada (BC), the Bank of Japan (BJ), the Reserve Bank of New Zealand (RBNZ), the Swedish Riksbank (SR), the Swiss National Bank (SNB), the Bank of England (BE) and the Federal Reserve System of the USA (Fed). This sample covers major OECD countries: all G7 countries plus other countries of the euro area, New Zealand, as well as Switzerland and

Sweden. Among these central banks, some of them follow inflation targeting regimes, which will have to be acknowledged in the empirical study (see below).

The time span contains quarterly observations from 1999Q1 to 2008Q3. This time span is limited by the activity of the European Central Bank and data availability - e.g. BJ and SNB publish their annual reports on their website since 1999, BE since 2000 only (though it includes the financial report for 1999). However, this time span also ensures consistency and comparability. Moreover, in most countries and notably the Euro zone and the United States this period covers one full "interest rate cycle". Namely, interest rates moved generally upward approximately during the first two years (until the end of 2000) and then a remarkable tendency to cut them emerged, being reinforced by the September 2001 attacks and the general subsequent economic slowdown. Finally, after a relative stability in 2003 and 2004, an equally marked upward movement is easily perceivable. This last tendency moved interest rates in most countries to a level equal or comparable with the one in the beginning of the period. The last period (2007-2008) corresponds to the crisis period, which has seen policy rates driven to very low levels.

In order to assess the impact of central banks' elites on their outcomes, a databank including the CVs of MPCs' members, containing 175 entries was constituted (see the APPENDIX 1). Most of the data have been retrieved from the websites and especially annual reports of the analyzed central banks. Nevertheless, some details of certain biographies come from other sources: *Who's who* website, *Central bankers in the news* (www.centralbanking.co.uk), *Forbes*, *Quid* and finally directly from press or personnel services of central banks.

The database allows for taking into consideration some external factors, such as the number of members and measures of MPC dynamics (number of changes and turnover, i.e. the number of changes with regard to the size of the MPC). However, its focus is on the internal characteristics of MPCs: demographic characteristics (age and gender) as well as social ones (professional profile and educational background).

2.1. Monetary policy committees size and dynamics

We first consider the size of the committee by itself. This feature is both empirically important (as the debates around the enlargement of the Euro area have shown), and theoretically (as there is a presumption, dating at least to Condorcet, 1785, that an increase in the number of members of a committee could lead to better informed decisions[2]).

However, one of the distinctive features of the database is to take into account the real number of appointed policy makers and not the statutory number of MPC members. For example, while the FOMC has twelve voting seats, during 1999-2001, most of 2005 and 2007-8 two positions were vacant. Here, we consider the number of members to be 10 and not 12 during that period.[3] This choice influences the analysis (and especially the shares of

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2. The presumption is now severely contested in the literature, see for example the survey by Gerling *et al.* (2005).

3. However, as the frequency adopted for the whole analysis is quarterly, it was decided not to pay attention to members present and absent during any particular MPC meeting.

different categories presented below) as the total number of members in the sample varied between 69 in 2006:Q3, and 73, when all positions were filled (during 2003-2004), and 75 in 2008:Q1 (when the ECB Governing Council was enlarged by Governors from Malta and Cyprus, but two seats were vacant in the Fed).

The second characteristic we consider is also linked to the number of members and is the turnover of MPC members. In the corporate governance literature, this feature has been shown to influence the work of any committee. In the case of MPCs, turnover might be even more important for a number of reasons. On the one hand, the turnover is linked to the tenure of MPC members which is used as one of the factors influencing central bank independence, and this interaction has already been investigated.[4] Similarly, an excessive turnover might endanger the MPC credibility, which is probably equally important. On the other hand, from a principal-agent perspective and depending on the appointment process, an increased turnover may be an incentive to work harder, for example by acquiring additional information.

Within the whole sample, the New Zealand Reserve Bank is the only one where monetary policy is decided by a single decision-maker. The largest MPCs are the ECB's (20 members since 2008 and 21 since January 2009, when Slovakia joined the euro area) and the FOMC (12 members). In most countries the number of members is absolutely stable, though, in some countries like the USA, Great Britain or Australia, some seats remained unfilled during relatively long periods.

In most of the analyzed countries the replacement of MPC members is quite smooth and, usually, the terms of office overlap and each year there are a few changes, without affecting the overall composition of the committee. However, in a country with a single decision maker, one change signifies a "total turnover" of the committee. Moreover, in the FOMC, due to the rotation scheme of Federal Reserve Banks' Presidents, each year in January at least 4 voting members change. In order to assess the impact of these MPC dynamics two variables are computed: the number of changes and turnover. A replacement was counted as one change, whereas a resignation without replacement (or a nomination to an unfilled position) was counted as "half a change".[5] However, as the sizes of MPCs differ, to take into account the relative impact of the change, the turnover variable is defined as the number of changes with regard to the effective number of members of the committee.

As the total number of MPC positions in analyzed OECD countries equals 75 and the number of decision-makers who served during the analyzed time span is 175, the average turnover in the sample slightly exceeds 1.3 for the whole period. This means that, on average, in all the analyzed MPCs, each member was replaced at least once.

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4. See e.g. Cukierman (1992) and the more critical study by Dreher *et al.* (2008).
5. Thus, e.g. the joining of the President of Bank of Greece to the Governing Council of the ECB in 2001 (related to the enlargement of the euro area) was counted as "half a change".

2.2. Monetary policy committees' demography

We study the link between the age structure of central banks' elites and their inflationary performance, on the premise that age may influence the degree of conservatism. For the age variable, the "average year of birth" of the surveyed central bankers was 1946.[6] However, the average age varied only slightly for the whole sample (between 56.3 and 58.6) during the analyzed time span, being roughly constant, being equal to 57.1 in 1999:Q1 and to 57.0 in 2008:Q4. These two evolutions are illustrated in FIGURE 1.

Figure 1 - Demographic features of MPC members

Mean age of governors (left axis)   Number of women (right axis)
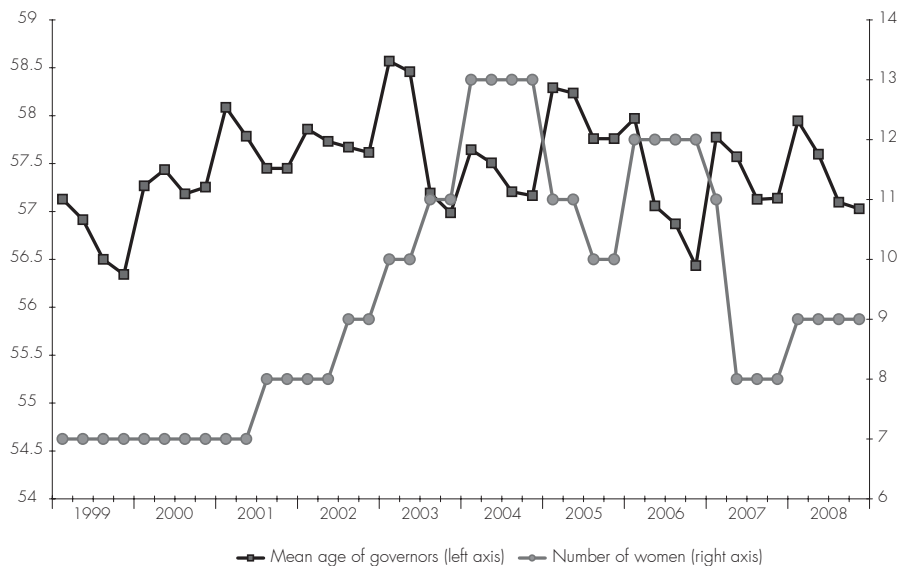
Moreover, the frequency of years of birth of the 168 governors roughly followed a normal distribution, which is illustrated in FIGURE 2. Nevertheless, it seems important to remark that there were important differences between countries, with the oldest on average MPCs to be found in Japan and the United States, followed by the ECB, while the youngest was in Sweden in the beginning of the sample period and in Switzerland towards the end.

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6. It was possible to find the years of birth for 168 out of the 175 surveyed MPC members in OECD countries. It was due, among others, to the Bank's of Canada privacy policy, whose press service did not provide years of birth for two Canadian governors. Hence, for the following empirical analysis, the year of birth of governors for whom we had no precise information was approximated by the year of their graduation minus 21, which seems a plausible assumption and turns out to be an innocuous choice.

Figure 2 - Distribution of MPC members' age
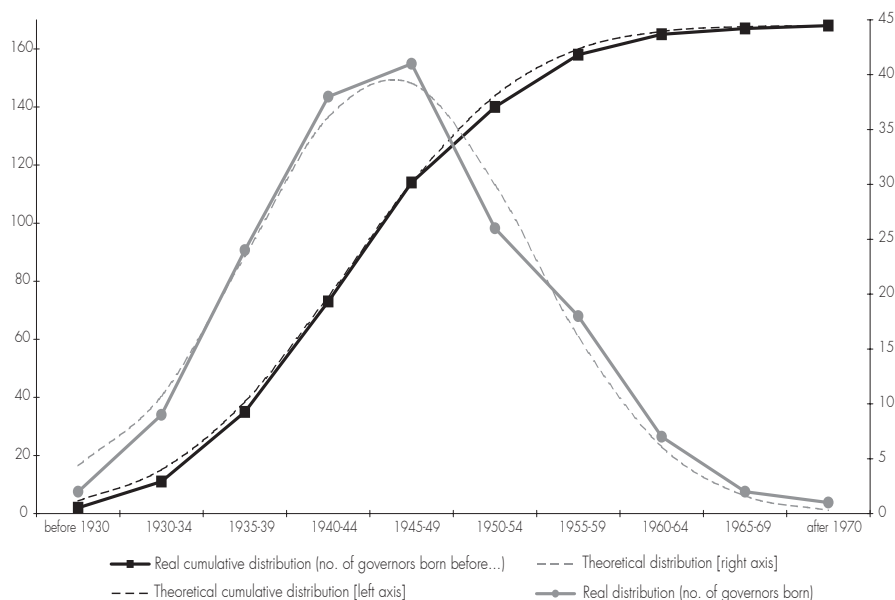
Note: Theoretical distributions were plotted using mean and variance computed from the sample: theoretical values follow N (1946, 69).

Source: Authors.

We consider another sociologically interesting demographic feature – gender –, as it may also have an impact on MPC members' preferences. Chappell and McGregor (2000) for example remark that female members of the FOMC tended to be on the dovish side of the preference spectrum.

Among the 175 decision makers who were in charge of monetary policy in the 9 surveyed OECD central banks, only 20 were women (11.4 %). However, in the analyzed period their number increased from 7 (out of 70) in 1999:Q1 to 12 (out of 68) in 2006:Q3 to come back down to 9 (out of 74) in 2008.[7] The most feminized MPC is Sweden's where, since 2003, the council includes 50% of women. During some periods, women represented a third (3 out of 9 committee members) of the Bank of England's MPC. On the other hand, in Switzerland as well as in New Zealand there were no women during the whole period, while in the ECB, the RBA, Bank of Canada as well as in the Bank of Japan, one of the MPC members was female (not necessarily the same during the whole period, but usually female members are replaced by other women[8]).

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7. Note that the appointed women presently tend to be younger than their male counterparts, which impacts on the average age.

8. E.g. in the Board of the ECB Gertrude Tumpel-Gugerell replaced Sirkka Hamalainen in May 2003 and in Japan Miyako Suda replaced Eiko Shinotsuka in 2001.

2.3. Central bankers' social characteristics

As in Göhlmann and Vaubel (2007), we suppose that the socialization processes the central bankers undergone throughout their professional career can influence monetary policy. In order to assess this impact, we first analyze their dominant type of professional experience. This variable is classified into five categories: public economy (meaning that the MPC member worked for the government, e.g. as the finance minister, treasurer or, very rarely, for a state-owned enterprise); private economy (if the MPC member worked mainly in the private sector); academia (if the member followed an academic career); central banker (if the main part of the professional life was spent within the central bank); and, finally, other (mainly professional politicians, but also a few jurists and journalists).[9] The structure of these categories for the 175 MPC members of our database is presented in FIGURE 3.

This structure, however, is not stable, even in the relatively short (40 quarters) time span of the present analysis. The share of public economists varied between 24.6 and 28.4%. Remarkably, the share of academics increased from about 16% in the beginning of the period (11 out of 70) to slightly more than 20% (15 out of 74). This evolution was first detrimental to central banks insiders, whose share decreased from 30% in 1999 to slightly more than 21% in 2007, before coming back to more than 27% in 2008. The participation of private economists in the beginning was close to 24% and increased to ca. 28%. The share of members classified as "others" was very restrained (3-6%) during the whole period. These evolutions are presented in FIGURE 4.

Figure 3 - Structure of MPC members' professional affiliations (1999 - 2008 average)
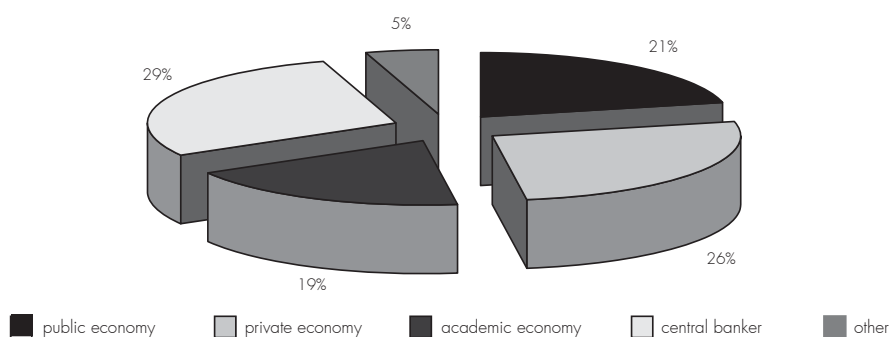
Source: Authors.

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9. As in the further analysis the focus of attention will be given to heterogeneity of committees, it seemed inappropriate to allow for different types of career for individual members. We decided to consider the dominant (and not the last) type of occupation because the last job was in some cases very short-lasting in which case the socialization process would have been limited. In a few cases, when a member worked during similar periods in e.g. academia and government, the last experience was chosen.

Figure 4 - Shares of professional categories over time
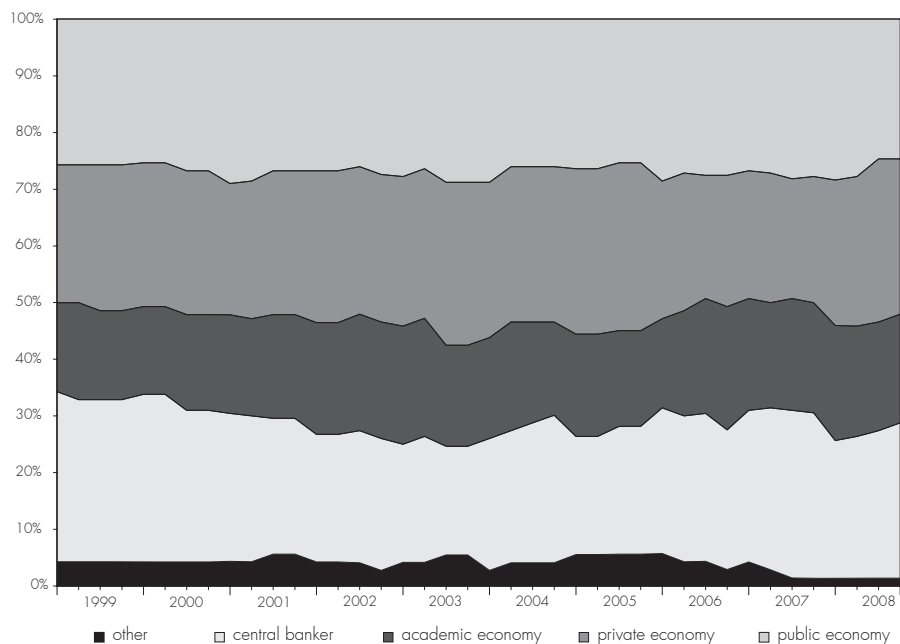
Source: Authors.

However, one has to notice that these proportions significantly differ between countries. Some central banks have the obligation to include active professionals in their MPCs (e.g. Australia), while some others interpret the general clause (present in virtually all central bank acts and statutes) that the MPC members must be recognized specialists as a quasi-obligation to appoint mainly professors of macroeconomics and finance. Hence, for example, the Governing Council of the ECB is dominated by "public economists" (their number varied between 10 and 13 on the total 17-21 members), in Australia "private economists" systematically represent half of the Reserve Bank Board members (4 or 5 out of 9) while the Bank of Canada is governed mainly by "central bankers". Some MPCs have significantly evolved during the period: in 1999, the British MPC was constituted mainly of central bankers (4) and academics (3), while in 2006:Q3 it was composed in equal numbers (2) of academics, central bankers and public economists, all these being completed by a private economist. In 2008 once more, central bankers (3) and academics (3) dominated the rest of the council (1 public and 2 private economist). Heterogeneity is also a characteristic feature of the Swedish MPC.

The second social feature we consider is education, as it is an eminent factor shaping the general outlook of people and thus also their preferences[10]. Similarly to the professional background, educational attainments were dispatched into five categories: Bachelor (including LLBs), Master (both of science and arts), MBA, PhD and, finally Professors. A few comments on this categorization are in order: First, it was decided to distinguish MBA as a separate category, even if it turns to be the smallest one, because such a specifically entrepreneurial formation may matter in shaping policy preferences. Second, even if professorship is not a diploma, this professional title should prove an important capacity to analyze information and transmit knowledge to different kinds of public, which is important in modern monetary policymaking. The communication skills of academics can also be an asset to improve the accountability of the monetary policy and thus increase its effectiveness.

Figure 5 - Shares of education levels
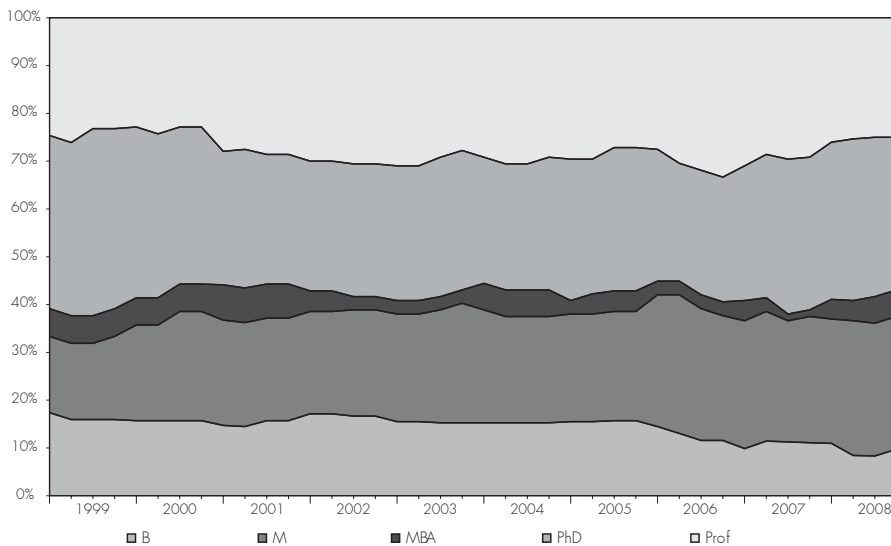
Source: Authors.

Among the 175 monetary policy makers we surveyed, the biggest part (32%) is PhD holders, followed by professors (25%), and masters (21%), further completed by a significantly smaller participation of bachelors (16%) and by the smallest group of MBA holders (6%). Nevertheless, the important observed evolution during the period relied on the constantly growing part of professors – mainly at the cost of PhD holders until 2006 – a trend which was reversed thereafter. Also, the participation of bachelors markedly decreased in the second half of the

10. We consider education by degree and not by field (as Dreher *et al.*, 2009, or Göhlmann and Vaubel, 2007, do). As our sample contains both the diploma and the professional background of committee members, considering the field of education would have overlapped in many cases with the committee members' experiences, and would have led to colinearity problems. Moreover, a second argument is that a dominant part of the individuals in our sample held economic degrees (about 90%).

period (from 12 out of 70 in the 2005:Q4 to 6 out of 73 in 2008:Q3).[11] This trend is likely to persist, as the bachelors in MPCs are significantly older than other members and should thus retire sooner (the "average year of birth" is 1940 for all the bachelors). Moreover, the general and already mentioned trend in monetary policy making is to rely more and more on academics. These evolutions are illustrated by FIGURE 5.

2.4. Assessing heterogeneity

Heterogeneity of MPC members may have an important influence on monetary policy making by a committee for a few reasons. First, in a very homogeneous committee a danger of groupthink is more likely to emerge, meaning that if all members of a committee are similar, they may also err in a similar way and reach an erroneous consensus.[12] Second, heterogeneous agents are more likely to provide a larger scope of information, which can be crucial for an effective monetary policy making.[13] Thus, it seems that the heterogeneity of committee members might be to a certain extent substitutive to the size of a committee (three identical individuals have a probably smaller cumulated knowledge than three heterogeneous ones).

Heterogeneity of MPCs will be assessed on the basis of the shares of different social and demographic categories. A heterogeneity indicator (the Herfindahl index) is computed for the three categories of data (education, profession and gender). The Herfindahl index is a sum of squared shares of each subset in the group. It is equal to one in case of perfect homogeneity (all members of the subset belong to the same group). That is, the more heterogeneous the MPC, the lower the value of the index.[14] An overall heterogeneity index, as a simple average of the three computed category by category has also been computed.

The central banks we consider substantially differ with respect to their MPC heterogeneity. Obviously, in countries where a single policy maker exists (New Zealand), all heterogeneity indicators are, by definition, equal to 1. Among the remaining countries the most heterogeneous is Sweden's MPC where, since 2003, among the six members the gender parity is held and, with respect to educational and professional categories, a 1-1-2-2 pattern is usually followed.[15] The overall heterogeneity scores of the ECB are in the middle of the sample

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11. Moreover, five of the bachelors serving in 2006 were at the BJ, two at RBA and one in the British MPC. Another interesting remark is that the majority of bachelors (14 out of 25) represented the private sector. As such, they were probably expected to bring into their respective MPC the private economy's point of view.

12. Probably the most commonly cited example of groupthink is the Bay of Pigs Invasion in 1961 (the counselors of the American President were very homogeneous and thus had very similar visions of the world which lead to the erroneous decision to invade Cuba). See Janis (1983), especially chapter I, p. 14 and following therein.

13. On these issues, see notably Blinder and Morgan (2005, 2008).

14. As educational attainments (B, M, MBA, PhD, Prof.) as well as career backgrounds (academic, private or public economy, central banker or other) are categorised in five subsets, heterogeneity indices for these features (*PRO_HOM* and *EDU_HOM*) may range from 0.2 to 1. Index of gender heterogeneity may take values between 0.5 and 1. Recall that a higher value of index means lower heterogeneity.

15. E.g. in 2003:Q1, among the 6 members there were 3 women, which means that the gender heterogeneity indicator is equal ½ – the minimal possible value. With respect to professional career there were 2 private economists, 1 public economist, 1 central banker, 1 academic economist and one "other", which makes the heterogeneity indicator equal to 0.22 (very close to the minimal value of 0.2). With respect to education there were 1 MA, 1 MBA, 2 PhD holders and one Professor, which makes the homogeneity indicator 0.28 - only slightly greater than in the previous category.

and were rather stable during the whole period (decreasing only marginally from 0.55 in 1999:Q1 to 0.52 in 2008:Q4). However, the ECB scores among the most heterogeneous with respect to education and is rather homogeneous (dominated by public economists) with respect to decision-makers' professional careers.

The evolutions of all the heterogeneity indicators, country by country[16] can be observed in FIGURE 6.[17] The average for all OECD countries of the overall heterogeneity indicator was the same (0.57) in 1999:Q1 and in 2008:Q4, but it reached a minimum of 0.53 in 2004:Q3. Somewhat more interesting are the evolutions of the three elements which are put together to form the overall indicator. While, on average, MPCs are more and more heterogeneous with respect to professions, the average MPC becomes slightly more homogeneous with respect to the educational background of its members. Finally, as might be expected, because of the increasing share of female MPC members, the trend in gender heterogeneity was increasing until 2006.
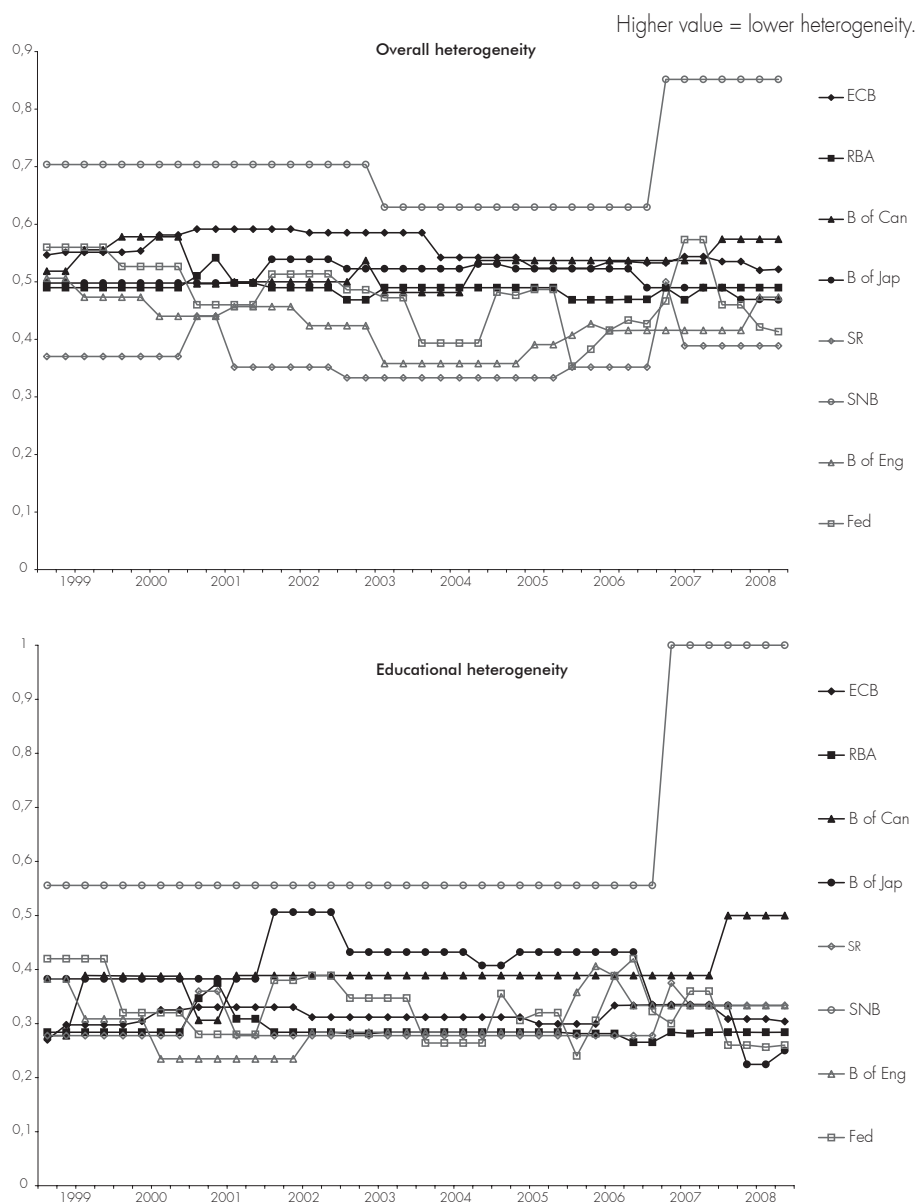
Summing up, it appears that the most remarkable trends observed in OECD countries' central bank governance in recent years are the following: an increase in the number of professors (at the cost of doctors and bachelors), as well as a significant increase in the proportion of academics and (to a limited extent) private economists. All these evolutions are completed by a slight increase in feminization of MPCs, accompanied by a marginal decrease in average age. However, it seems difficult to globally assess the trend in homogeneity of MPCs. While main professional experience and gender tend to become more and more heterogeneous across most MPCs, the above-mentioned trend of increase in number of professors leads to a decrease in educational heterogeneity.

A note has to be made relatively to the influence of chairmen. In the literature, MPC Chairmen have generally been found to have an important influence on their committee's decisions. It would have been interesting to study their impact in our sample. However, on the whole period, our sample features 20 different chairmen, of which 45 % are central bank insiders. Moreover, though 12 changes occurred, two-thirds of these have been for a similar profile and, for only half of the remaining changes have driven an academic to the chair. This low mobility among chairmen forbids considering the role of chairmen in our sample, the lack of variability would only give way to spurious regressions.

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16. Homogeneity, in contrast to the previously presented shares of different categories, cannot be presented for the whole sample, because homogeneity indicators cannot be aggregated between countries. Consider a simple example: two perfectly homogeneous MPCs: one consisted of female professors with academic profile, and the other with male central bankers MSc holders. The aggregation of member profiles would inform who is in charge of monetary policy in these countries, but a computation of Herfindahl index for the aggregated MPCs would certainly not yield the conclusion that they are both homogeneous. Thus, facing a choice between presenting only averages of homogeneity indices or rather the values for all the countries, the second option was chosen.
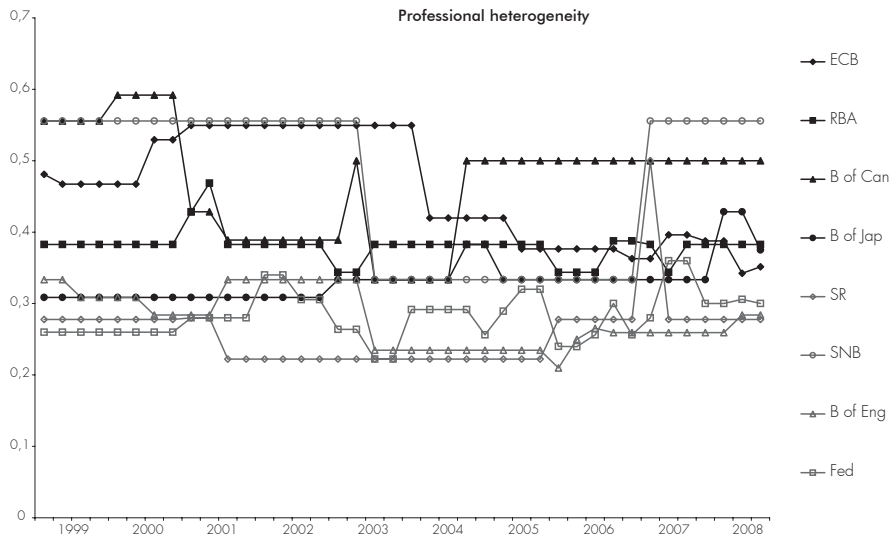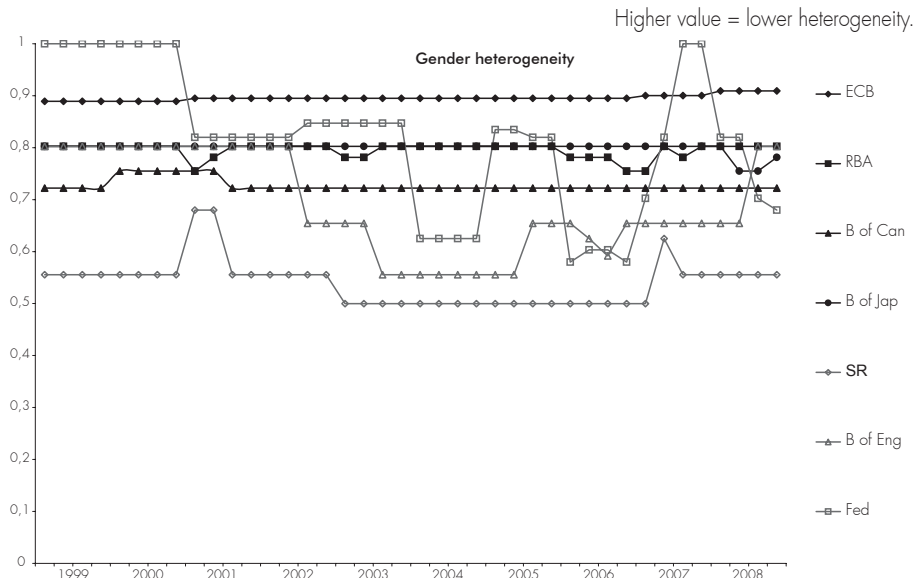
17. The lower right panel of the FIGURE 6 omits Switzerland, because Swiss MPC was composed of men only, which signifies that the Herfindahl index would stand at 1 during the whole period.

Figure 6 - Heterogeneity indicators, by country

Source: Authors.

Figure 6 - Continued

Higher value = lower heterogeneity.

Gender heterogeneity

Professional heterogeneity

Source: Authors.

3. EMPIRICAL EVIDENCE

As stated above, the empirical approach to assess boards' performance has logically so far mainly focused on firms' boards of directors. However, the evaluation of monetary policy with a focus on the decision-making mechanisms and the decision-makers themselves is growing.[18] One of the reasons for the lag between both strands of the academic literature is probably the lack of data.[19]

It is also true that if low and stable inflation is the statutory goal of all the nine prominent central banks under scrutiny, it became so only relatively recently. From now on, however, inflation seems the most natural gauge for assessing central bankers' efficiency. The average inflation rates in the nine countries during 1999:Q1-2008:Q3 are presented in TABLE 1.

Table 1 - Average inflation rates in selected OECD countries (1999-2008)

Country	Euro area	Australia	Canada	Japan	New Zealand	Sweden	Switzerland	UK	US
Inflation	2.19	3.12	2.27	-0.19	2.44	1.54	1.07	1.71	2.86

Source: Authors, based on IMF International Financial Statistics, CPI, annualized quarterly data.

As inflation is obviously determined by the general macroeconomic situation (macroeconomic shocks) as well as by monetary policy, the regressions will include macroeconomic variables which are supposed to influence inflation, i.e. the output gap (as an indicator of economic activity, with respect to internal equilibrium), as in a standard Phillips curve framework.[20] Moreover, as business cycles may be common among the sample countries, we include country specific fixed effects into the regressions. As inflation reacts with some lags to other economic variables as well as to monetary policy actions, the dependent variable is lagged one year. However, as our focus is on the impact of a central banker's background on its central bank inflation performance, we add to the traditional equation MPC-characteristic variables. It has to be noted that the MPC features include such characteristics as size, homogeneity, shares of different educational or professional categories in the MPC, measures of MPC dynamics – turnover and number of changes, etc. A positive coefficient for these variables would mean that they make the committee more inflation-prone (dovish), while a negative one would indicate a more inflation adverse (hawkish) committee.

It also has to be noted that some central banks in our sample have adopted an inflation-targeting regime (see TABLE 2). As a consequence, the monetary policy committee's ability to manipulate inflation could be constrained by the principal-agent relationship such a regime implies (see, e.g., Walsh, 1995). To take this potential constraint into account, we consider

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18. As stated above, the closest to the present one is Göhlman and Vaubel's (2007). Other assessments of monetary policy performance include Cecchetti and Krause (2002) or Hasan and Mester (forthcoming), but these authors took into consideration such parameters as central bank independence, accountability, transparency and credibility and not decision makers.

19. For example, the sample size in meta-analysis by Dalton *et al.* (1998) was of over 40,000 observations, whereas central banks have only recently become more open in delivering data.

20. Other variables were tested, but none were significant.

the inflation gap (i.e. the difference between actual inflation and the central bank's target) as the dependent variable.

Table 2 - Inflation targets or reference levels (values for 2008)

	Target or reference	Regime adopted since	Precision
Reserve Bank of New Zealand	1 – 3%	1989	
Bank of Canada	2% ± 1%	1991	
Bank of England	2% ± 1%	1992	
Reserve Bank of Australia	2 – 3%	1993	
Swedish Riksbank	2%	1995	
Swiss National Bank	<2%	2000	No official inflation targeting regime
European Central Bank	2 %	1999	No official inflation targeting regime
Bank of Japan	NO	-	
Federal Reserve System	NO	-	

Source: Authors, from central banks websites.

As a consequence, we consider two different models. The first model includes fixed effects (equation 1), while the second provides a dynamic panel analysis (equation 2). To summarize:

i) the fixed effects model

$$\pi_{jt} - \pi_j^* = \kappa_j + \lambda . x_{jt} + \sum_l \alpha_l \, MPC_{ljt} + \varepsilon_{jt} \quad \text{with } j = 1...9 ; t = 1...40 \tag{1}$$

where:

$\pi_{jt} - \pi_j^*$ is the year-on-year inflation gap rate in country j in quarter t,

κ_j are country-specific fixed effects,

x_{jt} is the output gap in country j in quarter t,

MPC_{ljt} are values of characteristic l of the committee j in quarter t,

ε_{jt} is the error term.

ii) the dynamic panel model

$$\Delta\pi_{jt} = \sum_p \rho_p \, \Delta\pi_{jt-p} + \kappa_j + \lambda . x_{jt} + \sum_l \alpha_l \, MPC_{ljt} + \varepsilon_{jt} \quad \text{with } j = 1...9 ; t = 1...40 \tag{2}$$

where $\Delta\pi_{jt-p}$ is the lag of the variation of inflation rate for the country j in quarter $t-p$,

TABLE 3 details the results for OLS and the fixed effects estimates.[21] Column (1) shows the results of the baseline equation estimates by simple OLS. Column (2) reports estimates of the fixed effects model. The parameters of countries' effect are significant and different. This supports the adoption of a panel approach to estimates the impact of MPC's characteristics on inflation performance. In addition, the *R*-square of the fixed effect model are greater than OLS model.

Results in Column (2) confirm the need to acknowledge for the influence of central bankers' background on their inflation performance. The coefficients related to the shares of, respectively, academics, private sector economists, and central bank insiders are strongly significant and negatively signed. The negative sign could be expected, as the three categories are supposed, respectively, to bring to the monetary policy debate the scientific expertise (with the consensus on the importance of price stability), the private sector realism (and the need of stable prices for sound investment decisions), and the central bank culture. The latter is, since the 1980s, more and more inclined towards price stability, as reveals the trend towards always more independence and autonomy for central banks (see Guillén and Polillo, 2005; Crowe and Meade, 2007). Another result is that the share of former public sector members is significant and positive, confirming the different behavior of this kind of MPC members. This may reveal a difference in culture these members bring to monetary policy committee, a culture relatively less sensitive to inflation than to the fight against unemployment, for example.

The specialists (academics and "insiders") are more able to attain the socially desired inflation rates[22] and, moreover, in the case of insiders, the present corporate culture of central banks probably makes their staff even more hawkish. But, once again, it has to be noted that this result is conform to theoretical expectations. Private economists, potentially representing interests of their sector, which is vulnerable to higher inflation induced costs, are usually seen as hawks (as in Havrilesky, 1993), a feature confirmed by the present study.

These results on "hawkish" professionals are globally in line with Göhlmann and Vaubel (2007) – i.e. it confirms their results on private economists and central banks' insiders being the most hawkish.[23] But, a striking difference between Göhlmann and Vaubel (2007)'s study and ours is that they find academics to be inflation-prone while the present study would rather qualify them as hawkish. While these authors argue that their result testifies the reign of a Keynesian spirit in academia, our results show how things have changed since the 1970s

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21. It has to be noted that while the first Section relies on the latest data available (2008:Q3), we have chosen to run the estimates on the 1999-2007 period, to avoid perturbations from the "subprimes" financial crisis, as one can expect serious revisions in the macroeconomic series we use (inflation and output gap notably).

22. As, in countries under inflation targeting regime, the target can be considered as the socially desired inflation rate.

23. See also Adolph (2003), who shows, for twenty developed countries over the period 1950-2000, that central bankers with careers in the financial sector preside over lower inflation, while central bankers with bureaucratic experience produce higher inflation. However, Adolph (2003) relates his results to career concerns (migration of central bankers to the financial world). Though we can not score out such an explanation, our database does not permit us to verify its influence.

and 1980s (as their study relies on the 1973-2000 period, against 1999-2008 for the present study). Neo-classical and New Keynesian economists now rule in the academia, a fact reflected in the appointment to central banks' boards.

Table 3 - Impact of MPC's characteristics on inflation performance
Fixed effects model

Variables	$\pi_{jt} - \pi_{j}^{*}$ (1)	$\pi_{it} - \pi_{j}^{*}$ (2)	$\Delta\pi_{it}$ (3)
Constant	2.533***		
	(0.3992)		
ECB		0.677	1.400**
		(0.3982)	(0.5648)
RBA		4.065***	3.126**
		(0.8874)	(1.2587)
BC		2.660***	1.796*
		(0.7512)	(1.0654)
BJ		2.895***	3.143**
		(0.8359)	(1.1856)
RBNZ		−0.09682	0.331
		(0.2062)	(0.2924)
SR		1.365**	2.144**
		(0.5999)	(0.8509)
BE		2.453***	2.639**
		(0.7805)	(1.1069)
Fed		5.616***	2.610**
		(0.7526)	(1.0674)
Output gap	0.220***	−0.01911	0.233***
	(0.0743)	(0.0540)	(0.0766)
Academics	−5.622***	−2.601**	−3.594**
	(1.072)	(1.1122)	(1.5775)
Private sector economists	1.272**	−4.529***	−3.402**
	(0.612)	(1.1869)	(1.6834)
Central bank insiders	1.366**	−3.508***	−2.142
	(0.529)	(1.0543)	(1.4953)
Public sector economists	0.653*	0.726**	−0.316
	(0.377)	(0.2923)	(0.4145)
R-square	0.2576	0.6566	0.1001

Standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$

It has to be noted that our results on private sector backgrounds may, at least at first view, contradict both Riboni and Ruge-Murcia's (2008) and Gerlach-Kristen's (forthcoming) findings on the Bank of England's outsiders. In these papers, the BE outsiders either tend to prefer lower policy rates (which could, in due time and everything being equal, translate in a higher inflation levels) and to be more "recession averse" (Gerlach-Kristen), or to "react more strongly to unemployment than internal members", though without a "clear pattern regarding their reaction to inflation" (Riboni and Ruge-Murcia). Estimation strategies and time-periods are different in these and our paper, which rules out direct comparisons, of course. Moreover, their independent variable is the interest rate, and not the inflation rate. Hence, while we consider year-on-year impacts on inflation, they look at instantaneous policy decisions, and it is all the more probable that lags or uncertainty on the transmission channels blur the impact of central bankers' backgrounds on such variables. Finally, it can be said that our estimates are based on a larger sample, which adds robustness to our results.

According to the literature, and notably in New Keynesian Phillips curves contexts, we should obtain a positive effect of the output gap on the inflation gap. However, it appears that the output gap is not significant in this relation. However, as the output gap is an indicator of an accelerating (or decelerating) economy, relating this variable to the inflation level says nothing on the dynamics of inflation. Hence, to take this into account, Column (3) presents the results of an estimate run with the change in inflation ($\Delta \pi_{jt}$) as the dependent variable. The output gap is now significant and positively signed, as expected.

As a consequence, we turn to the dynamic panel models with fixed effects methodology, developed by Arellano and Bover (1995) and Blundell and Bond (1998), which take advantage of the fact that lagged variables can provide instruments by building an optimal instrument matrix which can considerably increase estimation efficiency. In Arellano and Bover (1995), predetermined and endogenous variables in levels are instrumented with suitable lags of their own first differences. Blundell and Bond (1998) built on this and developed it. The derived augmented estimator is called the "system GMM".

TABLE 4 presents the results of system GMM for the dynamic panel estimates. It first has to be noted that the only significant lags are the first and the fourth. This reveals that year-on-year inflation variables are what counts, the intermediate quarterly estimates being much less determinant for the dynamics of the inflation rate. Second, the output gap coefficient is strongly significant and positively signed, confirming the fact than expansions are, ceteris paribus, accompanied by inflationary bursts.

Turning to the results on MPC members, it appears again that former academics, private sector economists, and central banks' insiders are the most hawkish central bankers, all the coefficients on these shares being strongly significant (though less for insiders) and negatively signed. This

dynamic specification also strengthens the result on a different behavior from MPC members with a public sector background, as their share impacts positively on inflation dynamics.[24]

Table 4 - Dynamic panel estimates

Variables	$\Delta\pi_{it}$ (1)	$\Delta\pi_{it}$ (2)	$\Delta\pi_{it}$ (3)
First lag	0.635***	0.656***	0.663***
	(0.0426)	(0.0426)	(0.0425)
Second lag	0.00606	0.00400	0.00670
	(0.0550)	(0.0560)	(0.0562)
Third lag	-0.0273	-0.0413	-0.0281
	(0.0617)	(0.0628)	(0.0627)
Fourth lag	-0.361***	-0.336***	-0.343***
	(0.0501)	(0.0507)	(0.0508)
Output gap	0.125***	0.0998**	0.108**
	(0.0473)	(0.0448)	(0.0446)
Academics	-1.775**		
	(0.790)		
Private sector economists	-1.182**		
	(0.551)		
Central bank insiders	-1.151*		
	(0.591)		
Public sector economists	0.597**		
	(0.255)		
Committee's size			-0.168*
			(0.0942)
Squared size			0.0107**
			(0.00504)
Women		-1.683**	
		(0.664)	
Constant	1.111***	0.352***	0.528
	(0.305)	(0.111)	(0.437)
Observations	256	256	256

Standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$

24. It may however happen, as Dreher *et al.* (2009) suggest, that the impact of profession and education is duration dependent. Such a duration effect may however have been a twin effect: first, the former experience of a committee member may influence her proportionally to the time she spent in there and, second, some former experiences may be more or less lasting while on the new job. We leave the explorations of these two effects for an extension of this research.

We also now consider the share of women in the MPCs, see Column (2). As noted above, Chappell and McGregor (2000), in their study of the Federal Reserve board (FOMC), remark that women could more often been qualified as doves, rather than hawks. In our case, gender also seems to play a role in monetary policy, but in the other direction: a higher share of female members is associated to lower inflation levels. As our sample is larger and more recent than theirs, the result may not be so surprising, and may simply reflect the general trend towards more "conservative" central banks. As we saw above, Rogoff's (1985) theoretical prescription has found its way towards more independent and autonomous central banks, with a stronger focus on price stability. It is thus not so surprising that, in the recent period, female members of the MPCs can be associated with lower inflation. By contrast, Chappell and McGregor (2000) cover the 1966 to 1996 period. This, by itself, may explain the difference in results.

Moreover, at least two other explanations of the difference in gender results can be given. A first explanation is that, in a macho world (and we have seen in the Section 2 that central banking is such a world), to be appointed, women have to show strong credentials, and a reputation for being tough on inflation is such a credential. From Waller's (2000) argument, for example, it derives that, if a society wants to reduce uncertainty, the profile of the delegates to a policy board has to be consensual. In other words, potential delegates' preferences have to be relatively identical. In our case, an aversion for inflation is to be expected. As the trend towards price stability has only increased in time, this may explain why we find women to have a negative impact on inflation.

However, given our definition of the variable (relative share of women inside the committee), we also have to explain why women would be more inflation averse than men. Our second explanation is that, once appointed, women have to be even tougher than their male counterparts to build their credibility inside the committee. Sibert's (2003) model of reputation and credibility building formulates the mechanism (though she does not consider the gender issue): in a committee, depending on the incentives (e.g. to be reappointed), some members can mimic the more conservative ones, to gain in reputation and thus become more influential. Sociologists and psychologists who have studied the strategies women employ when working in male-dominated occupations often find that they use three strategies to respond to their minority status (see, e.g., Acker, 2004; Bagilhole, 2002; Connell, 1987; Sasson-Levy, 2003). And they show that among these strategies, one is engaging their selves in masculine practices to mimic men, the situation to which we were referring and which could be explained by a model of reputation-building.[25]

Finally, Column (3) of TABLE 4 delivers results concerning the size of the monetary policy committees. It clearly appears that size by itself (negatively) influences inflation. This result was expected (see for example Blinder and Morgan, 2005 and 2008), as groups tend to be more efficient than individuals separately considered. However, this size effect may

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25. The two other strategies mainly exhibited are: downplaying / ignoring sexual harassment and distancing themselves from emphasized femininity. We hope that our female central bank can serenely ignore the first strategy, and we have no clue concerning the last.

be counteracted if the committee's size increases, as more and more interactions are then needed and may be costly, in time notably, and may threaten consensus-building inside the committee (see, e.g., Stanek, 2004). Moreover, the coefficient on the committee's size is negative (larger MPCs obtain lower inflation) but the square of the size increases inflation changes. This allows us to compute an optimal size of the MPC, which is somewhere around 8 members.[26] This result is significant and conform to the literature on monetary policy committees, but it nonetheless has to be considered cautiously: though its direct application would mean that "one size does fit all", it is also true that larger countries tend to have larger boards[27], which probably reflects the need for a larger scope of information, supplied by a larger number of MPC members.

4.   CONCLUSION

The aim of this paper was to study whether central bankers' biographical data matters for inflationary performance. Using panel data on a database covering 175 central bankers for the 1999 to 2008 period, we have presented empirical evidence proving the contention.

Overall, our results first show that the size of the committee matters, and that there may be an optimal number of central bankers in a given country. Though a bigger size first decreases inflation, increasing it beyond a certain threshold may induce higher transaction and consensus-building costs.

Second, according to our estimates, gender is also related to the fight against inflation. However, contrary to preceding studies, we show that women tend to be more inflation adverse than male central bankers. This result is all the more important as there is, if anything, a trend towards feminization in this long-reputed macho world of central banking. Explanations of this result can rely on the need for women to show higher credentials than their male counterparts if they simply want to be appointed but also, once appointed, on a strategy of mimicking the more conservative ones to acquire/reinforce their reputation and thus become more influential.

Third, we provide evidence that the professional experience counts. Members of the monetary policy committees we surveyed coming from the academia, the private sector and from the central bank (insiders) proved to be more inclined to fight inflation than those coming from the public sector. This result is important as the trend is to appoint more and more pundits from the academia to central banks' acting committees, and it may as much reveal evolutions in the central banking spheres than in the academia.

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26. In the quadratic function $y = ax^2 + bx + c$, the extreme value is $x^* = -b/2a$, which is a minimum if $a > 0$. In the case of the estimates presented in the column (3) of TABLE 4, the minimal inflation will be attained for $SIZE = 0.168/(2*0.010) = 8.4$. This result is conform to the empirical finding of Berger and Nitsch (2008), who show minimum inflation to be reached between 7 and 10 committee members.

27. Among the sample countries, the correlation coefficient between a country's population and its MPC size is equal to 0.82.

In sum, our analysis confirms that the personal background and personal profiles of central bankers matters, even in the most recent period, where observers believed inflation to be tamed (and thus a period, it could be argued, during which personal profiles would have not been able to influence inflationary outcomes).

In terms of policy implication, our results matter because it seems that even in countries where the central bank is relatively immune from political pressures, governments may want to know the consequences of their choices when they appoint new central bankers. Needless to say, many other policy dimensions intervene in the determination of inflation, but choosing a bearded academic or a strait-laced public servant is not indifferent.

<div align="right">É. F., H. H. & P. S.[28]</div>

APPENDIX 1

Table A1.1- The database

	C. Bank	Name	Gender	Born	Education	Profession	Served*	As President
1	BoC	Bonin	M	1936	Prof	public economy	1999Q1-1999Q2	
2	BoC	Carney	M	1966	PhD	private economy	2003Q3-2004Q3	2008Q1-2008Q4
3	BoC	Dodge	M	1943	Prof	academic economy	2001Q1-2007Q4	2001Q1-2007Q4
4	BoC	Duguay	M	1950	M	central banker	2000Q1-2008Q4	
5	BoC	Freedman	M	1941	PhD	central banker	1999Q1-2003Q2	
6	BoC	Jenkins	M	1946	M	central banker	1999Q1-2008Q4	
7	BoC	Kennedy	W	1946	M	public economy	1999Q1-2008Q4	
8	BoC	Knight	M	1944	PhD	public economy	1999Q3-2003Q1	
9	BoC	Longworth	M	1952	PhD	central banker	2003Q2-2008Q4	
10	BoC	Macklem	M	1961	PhD	central banker	2004Q4-2007Q4	
11	BoC	Murray	M	1952	PhD	central banker	2008Q1-2008Q4	
12	BoC	Noel	M	1943	MBA	central banker	1999Q1-2001Q2	
13	BoC	Thiessen	M	1938	PhD	central banker	1999Q1-2000Q4	1999Q1-2000Q4
14	BoE	Allsopp	M	1941	M	academic economy	2000Q3-2003Q2	
15	BoE	Barker	W	1957	B	private economy	2001Q3-2008Q4	
16	BoE	Bean	M	1953	Prof	academic economy	2000Q4-2008Q4	
17	BoE	Bell	W	1957	M	private economy	2002Q3-2005Q2	
18	BoE	Besley	M	1961	Prof	academic economy	2006Q4-2008Q4	
19	BoE	Blanchflower	M	1952	Prof	academic economy	2006Q3-2008Q4	
20	BoE	Budd	M	1938	Prof	academic economy	1999Q1-1999Q2	
21	BoE	Buiter	M	1949	Prof	academic economy	1999Q1-2000Q2	
22	BoE	Clementi	M	1949	MBA	private economy	1999Q1-2002Q3	
23	BoE	Davies	M	1951	M	private economy	1997Q1	
24	BoE	Deanne	W	1949	PhD	public economy	1999Q1-2001Q2	
25	BoE	George	M	1938	B	central banker	1999Q1-2003Q2	
26	BoE	Gieve	M	1950	M	public economy	2006Q1-2008Q4	
27	BoE	Goodhart	M	1936	Prof	central banker	1999Q1-2000Q1	
28	BoE	King	M	1948	Prof	central banker	1999Q1-2008Q4	1999Q1-2008Q4
29	BoE	Lambert	M	1944	B	other	2003Q3-2006Q1	
30	BoE	Large	M	1942	MBA	private economy	2002Q4-2005Q4	
31	BoE	Lomax	W	1945	M	public economy	2003Q3-2008Q2	
32	BoE	Nickell	M	1944	Prof	academic economy	2000Q3-2006Q2	
33	BoE	Plenderleith	M	1945	MBA	central banker	1999Q1-2002Q2	
34	BoE	Sentance	M	1958	PhD	private economy	2006Q4-2008Q4	

* For rotating presidents of Federal Reserve Banks, the years indicate when they disposed of the voting right.

	C. Bank	Name	Gender	Born	Education	Profession	Served*	As President
35	BoE	Spencer	M	1967	M	central banker	2008Q3-2008Q4	
36	BoE	Tucker	M	1958	M	central banker	2002Q3-2008Q4	
37	BoE	Vickers	M	1958	Prof	academic economy	1999Q1-2000Q3	
38	BoE	Wadhwani	M	1959	PhD	private economy	1999Q3-2002Q2	
39	BoE	Walton	M	1963	M	private economy	2005Q3-2006Q2	
40	BoJ	Iwata	M	1946	Prof	academic economy	2003Q1-2008Q1	
41	BoJ	Fujiwara	M	1937	B	other	1999Q1-2002Q4	
42	BoJ	Fukui	M	1935	B	central banker	2003Q1-2008Q1	2003Q1-2008Q1
43	BoJ	Fukuma	M	1937	B	private economy	2002Q1-2006Q4	
44	BoJ	Gotoh	M	1933	B	politic	1998Q1-1998Q4	
45	BoJ	Haru	M	1937	B	private economy	2002Q1-2006Q4	
46	BoJ	Hayami	M	1925	B	central banker	1999Q1-2002Q4	1999Q1-2002Q4
47	BoJ	Hirohide	M	1951	B	central banker	2008Q4	
48	BoJ	Kamezaki	M	1943	MBA	private economy	2007Q1-2008Q4	
49	BoJ	Masaaki	M	1949	M	central banker	2008Q2-2008Q4	2008Q2-2008Q4
50	BoJ	Miki	M	1932	B	private economy	1999Q1-2001Q4	
51	BoJ	Mizuno	M	1959	PhD	private economy	2004Q4-2008Q4	
52	BoJ	Muto	M	1943	B	public economy	2003Q1-2008Q1	
53	BoJ	Nakahara	M	1934	M	private economy	1999Q1-2001Q4	
54	BoJ	Nakahara	M	1937	B	private economy	2001Q1-2006Q2	
55	BoJ	Nakamura	M	1942	B	private economy	2007Q1-2008Q4	
56	BoJ	Nishimura	M	1953	Prof	academic economy	2005Q2-2008Q4	
57	BoJ	Noda	M	1947	B	private economy	2006Q3-2008Q4	
58	BoJ	Shinotsuka	W	1942	PhD	academic economy	1999Q1-2000Q4	
59	BoJ	Suda	W	1948	Prof	academic economy	2001Q1-2008Q4	
60	BoJ	Taketomi	M	1940	B	private economy	1999Q1-2000Q4	
61	BoJ	Taya	M	1945	PhD	private economy	1999Q1-2005Q1	
62	BoJ	Ueda	M	1951	Prof	academic economy	1999Q1-2004Q3	
63	BoJ	Yamaguchi	M	1940	B	central banker	1999Q1-2002Q4	
64	ECB	Bini Smaghi	M	1956	PhD	central banker	2005Q3-2008Q4	
65	ECB	Bonello	M	1943	MSc	public economy	2008Q1-2008Q4	
66	ECB	Caruana	M	1952	M	public economy	2000Q3-2006Q2	
67	ECB	Domingo Solans	M	1945	Prof	academic economy	1999Q1-2004Q2	
68	ECB	Draghi	M	1947	Prof	public economy	2006Q1-2008Q4	
69	ECB	Duisenberg	M	1935	Prof	public economy	1999Q1-2003Q3	1999Q1-2003Q3
70	ECB	Fazio	M	1946	Prof	public economy	1999Q1-2005Q4	
71	ECB	Fernandes de Sousa	M	1955	PhD	public economy	1999Q1-2000Q1	

* For rotating presidents of Federal Reserve Banks, the years indicate when they disposed of the voting right.

	C. Bank	Name	Gender	Born	Education	Profession	Served*	As President
72	ECB	Garganas	M	1937	PhD	public economy	2002Q3-2008Q2	
73	ECB	Gaspari	M	1951	M	central banker	2007Q1	
74	ECB	Gonzales Paramo	M	1958	Prof	central banker	2004Q3-2008Q4	
75	ECB	Hamalainen	W	1939	PhD	central banker	1999Q1-2003Q2	
76	ECB	Hurley	M	1945	M	public economy	2002Q2-2008Q4	
77	ECB	Issing	M	1936	Prof	public economy	1999Q1-2005Q2	
78	ECB	Kranjec	M	1940	PhD	public economy	2007Q3-2008q4	
79	ECB	Liebscher	M	1939	PhD	private economy	1999Q1-2008Q3	
80	ECB	Liikanen	M	1950	M	other	2004Q3-2008Q4	
81	ECB	Louekoski	M	1941	M	other	2004Q2	
82	ECB	Mersch	M	1949	M	public economy	1999Q1-200884	
83	ECB	Nowotny	M	1944	Prof	academic economy	2008Q4	
84	ECB	Noyer	M	1950	M	public economy	1999Q1-20002Q2; 2003Q4-2008Q4	
85	ECB	O'connel	M	1936	M	public economy	1999Q1-2002Q1	
86	ECB	Ordonez	M	1945	M	public economy	2006Q3-2008Q4	
87	ECB	Orphanides	M	1960	PhD	academic economy	2008Q1-2008Q4	
88	ECB	Padoa-Schioppa	M	1940	MSc	central banker	1999Q1-2006Q2	
89	ECB	Papademos	M	1947	Prof	public economy	2001Q1-2008Q4	
90	ECB	Provopoulos	M	1950	PhD	private economy	2008Q3-2008Q4	
91	ECB	Quaden	M	1945	Prof	academic economy	1999Q2-2008Q4	
92	ECB	Rant	M	1946	M	central banker	2007Q2	
93	ECB	Ribeiro Constancio	M	1943	Prof	public economy	2000Q2-2008Q4	
94	ECB	Rojo	M	1934	PhD	central banker	1999Q1-2000Q2	
95	ECB	Stark	M	1948	PhD	central banker	2006Q3-2008Q4	
96	ECB	Tietmeyer	M	1931	PhD	public economy	1999Q1-1999Q3	
97	ECB	Trichet	M	1942	M	public economy	1999Q1-2008Q4	2003Q4-2008Q4
98	ECB	Tumpel-Gugerell	W	1952	PhD	central banker	2003Q3-2008Q4	
99	ECB	Vanhala	M	1946	M	public economy	1999Q1-2004Q1	
100	ECB	Verplaetse	M	1930	B	central banker	1999Q1	
101	ECB	Weber	M	1957	Prof	academic economy	2004Q2-2008Q4	
102	ECB	Wellink	M	1943	PhD	public economy	1999Q1-2008Q4	
103	ECB	Welteke	M	1942	M	public economy	1999Q4-2004Q1	
104	Fed	Geithner	M	1961	M	public economy	2003Q3-2008Q4	
105	Fed	Moskow	M	1938	PhD	other	1999, 2001, 2003, 2005, 2007Q1-2007Q2	

* For rotating presidents of Federal Reserve Banks, the years indicate when they disposed of the voting right.

	C. Bank	Name	Gender	Born	Education	Profession	Served*	As President
106	Fed	Bernanke	M	1953	Prof	academic economy	2002Q3-2005Q1; 2006Q2-2008Q4	2006Q2-2008Q4
107	Fed	Bies	W	1947	Prof	private economy	2002Q1-2007Q1	
108	Fed	Boehne	M	1940	PhD	central banker	1999	
109	Fed	Broaddus	M	1939	PhD	central banker	2000,2003	
110	Fed	Duke	W	1952	MBA	private economy	2008Q3-2008Q4	
111	Fed	Evans	M	1958	PhD	central banker	2007Q3-2007Q4	
112	Fed	Ferguson	M	1951	PhD	private economy	1999Q1-2006Q1	
113	Fed	Fisher	M	1949	MBA	private economy	2005, 2008	
114	Fed	Gramlich	M	1939	Prof	academic economy	1999Q1-2005Q2	
115	Fed	Greenspan	M	1926	PhD	public economy	1999Q1-2006Q1	1999Q1-2006Q1
116	Fed	Guynn	M	1943	M	other	2000, 2003, 2006Q1-2006Q3	
117	Fed	Hoenig	M	1946	PhD	central banker	2001,2004,2007	
118	Fed	Jordan	M	1941	PhD	central banker	2000,2002	
119	Fed	Kelley	M	1932	MBA	private economy	1999Q1-2001Q4	
120	Fed	Kohn	M	1942	PhD	central banker	2002Q3-2008Q4	
121	Fed	Kroszner	M	1962	Prof	academic economy	2006Q2-2008Q4	
122	Fed	Lacker	M	1955	Prof	central banker	2006	
123	Fed	McDonough	M	1934	B	private economy	1999Q1-2003Q2	
124	Fed	McTeer	M	1942	PhD	central banker	1999,2002	
125	Fed	Meyer	M	1944	Prof	academic economy	1999Q1-2000Q4	
126	Fed	Minehan	W	1947	MBA	central banker	2001, 2004, 2007Q1-2007Q2	
127	Fed	Mishkin	M	1951	Prof	academic economy	2006Q3-2008Q3	
128	Fed	Olson	M	1943	B	private economy	2001Q1-2006Q2	
129	Fed	Parry	M	1939	PhD	private economy	2000, 2003	
130	Fed	Pianalto	W	1954	MBA	central banker	2004, 2006, 2008	
131	Fed	Plosser	M	1948	PhD	academic economy	2008Q1-2008Q4	
132	Fed	Poole	M	1937	Prof	central banker	2001, 2004, 2007	
133	Fed	Rosengren	M	1957	PhD	central banker	2007Q3-2007Q4	
134	Fed	Santomero	M	1946	Prof	academic economy	2002, 2005	
135	Fed	Stern	M	1944	PhD	private economy	1999, 2002, 2005, 2008	
136	Fed	Warsh	M	1970	M	private economy	2006Q2-2008Q4	
137	Fed	Yellen	W	1946	Prof	academic economy	2006	
138	RBA	Akehurst	M	1949	M	private economy	2007Q4-2008Q4	
139	RBA	Batellino	M	1950	M	central banker	2007Q2-2008Q4	
140	RBA	Broadbent	W	1949	B	private economy	1999Q1-2008Q4	
141	RBA	Corbett	M	1942	PhD	private economy	2006Q1-2008Q4	
142	RBA	Evans	M	1943	B	public economy	1999Q1-2001Q1	

* For rotating presidents of Federal Reserve Banks, the years indicate when they disposed of the voting right.

	C. Bank	Name	Gender	Born	Education	Profession	Served*	As President
143	RBA	Gerard	M	1945	B	private economy	2003Q3-2005Q4	
144	RBA	Grenville	M	1944	PhD	central banker	1999Q1-2001Q4	
145	RBA	Henry	M	1957	PhD	public economy	2001Q2-2008Q4	
146	RBA	Jackson	M	1936	B	private economy	1999Q1-2000Q4	
147	RBA	Kraehe	M	1943	B	private economy	2007Q2-2008Q4	
148	RBA	Lowy	M	1930	PhD	private economy	1999Q1-2005Q4	
149	RBA	MacFarlane	M	1946	PhD	central banker	1999Q1-2006Q3	1999Q1-2006Q3
150	RBA	McGauchie	M	1950	B	private economy	2001Q2-2008Q4	
151	RBA	McKibbin	M	1957	Prof	academic economy	2001Q3-2008Q4	
152	RBA	Morgan	M	1940	M	private economy	1999Q1-2007Q2	
153	RBA	Pagan	M	1947	Prof	academic economy	1999Q1-2001Q1	
154	RBA	Stevens	M	1958	M	central banker	2002Q1-2008Q4	2006Q4-2008Q4
155	RBA	Warburton	M	1940	M	private economy	1999Q1-2002Q4	
156	RBNZ	Bollard	M	1951	PhD	public economy	2002Q4-2008Q4	2002Q4-2008Q4
157	RBNZ	Brash	M	1940	PhD	other	1999Q1-2002Q3	1999Q1-2002Q3
158	SNB	Blattner	M	1943	Prof	academic economy	2001Q1-2007Q1	
159	SNB	Gehring	M	1946	Prof	academic economy	1999Q1-2003Q2	
160	SNB	Hildebrand	M	1963	PhD	private economy	2003Q3-2008Q4	
161	SNB	Jordan	M	1963	PhD	central banker	2007Q2-2008Q4	
162	SNB	Mayer	M	1936	PhD	central banker	1999Q1-2000Q1	1999Q1-2000Q4
163	SNB	Roth	M	1946	PhD	central banker	1999Q1-2008Q4	2001Q1-2008Q4
164	SR	Backstrom	M	1954	PhD	public economy	1999Q1-2002Q4	1999Q1-2002Q4
165	SR	Bergstrom	M	1938	Prof	academic economy	1999Q1-2005Q4	
166	SR	Heikensten	M	1950	PhD	public economy	1999Q1-2005Q4	2003Q1-2005Q4
167	SR	Hessius	W	1958	B	private economy	1999Q1-2000Q4	
168	SR	Ingves	M	1953	PhD	public economy	2006Q1-2008Q4	2006Q1-2008Q4
169	SR	Nyberg	M	1945	Prof	private economy	1999Q1-2008Q4	
170	SR	Oberg	M	1946	M	public economy	2006Q1-2008Q4	
171	SR	Persson	W	1945	MBA	other	2001Q3-2007Q1	
172	SR	Rosenberg	W	1945	PhD	private economy	2003Q1-2008Q4	
173	SR	Srejber	W	1951	M	central banker	1999Q1-2007Q1	
174	SR	Svensson	M	1950	Prof	academic economy	2007Q3-2008Q4	
175	SR	Wickman-Parak	W	1947	M	central banker	2007Q3-2008Q4	

Source: Authors, Shaded areas signify imperfect certainty of data (as explained in the text).

* For rotating presidents of Federal Reserve Banks, the years indicate when they disposed of the voting right.

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