An Empirical Analysis of Monetary Policy Committees Composition and its Relationship with Monetary Policy *

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Abstract

This paper tests if the individual characteristics of Monetary Policy Committee (MPC) members have an impact on monetary policy. For such, we compiled a unique database with information for 439 individuals, who served as board members on 16 different inflation targeting central banks’ MPCs from 1999 to 2018. In this dataset, we depict some trends in the last twenty years: (i) an increasing share of women serving on MPCs, but still a minority, (ii) an increase on the share of members with previous private experience, and (iii) a trend for older members in MPCs. More so, we find evidence that: (i) a higher proportion of members with PhD in economics is associated with lower level and volatility of inflation, but it induces a flatter Phillips curve; (ii) more MPC women members are related to both lower and less volatile inflation; (iii) the average MPC age within a range of 55 and 60 years seems to be linked to less volatile inflation; and (iv) we find evidence that more members with both experience on private sector and academia correlates with lower inflation.

Keywords: monetary policy, MPC, policy-makers

JEL Codes: E52, E58, E63

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1 Introduction

“Society can give a central bank a clear mandate with long and short-run goals, but eventually it must appoint individuals to execute that mandate, and they will always have some discretion. Choosing the central banker is a complementary way to pick an objective function for the central bank. [Reis 2013]”

“... some education in economics, experience on Wall Street and largely non-partisan public service may increase the odds that a nominee will be guided by sensible views, they provide no guarantee. [Romer and Romer 2004]”

The standard literature in monetary policy emphasizes optimal policy from a modeling perspective, but it overlooks that such decision is taken by individuals, usually in committees. Irrespective of the mandate or goal of the central bank, monetary policy will always rely at some level on the discretion of the people who operate it.

In this paper, we map if and which personal characteristics are associated with the best results for monetary policy. In order to do so, we compile a database aggregating personal characteristics of more than 400 individuals, who served in 16 different central banks between 1999 and 2018 and we focused on three groups of individual characteristics: demographics, professional background, and academic background. Much of the empirical research on the background of individual members of MPC is focused on classifying their stance in terms of monetary policy. Such literature usually analyses FED or BOE members and use transcripts and release of votes to infer the individual preference of each member. We depart from this approach in many dimensions. First, on the dataset, the literature is commonly focused only in developed countries and - to the best of our knowledge - nothing similar has been made on emerging markets economies. Second, the literature is mainly focused in the effects of MPCs among others.


2 On what refers to the dataset, our work relates to Farvaque et al. 2011, but our dataset is greatly enhanced as we add emerging markets, as well as developed ones, and we also bring a more thorough background of the MPC members.
composition on the inflation level – here, we extend the literature by looking not only at the level, but also at the volatility and at the trade-off between inflation and growth. Third, we try to understand what is the impact of a given member on the collective decision of the committee, which means that we are taking into account the joint impact of his preference and his persuasive skills.

In this paper, we took the average characteristics of the individuals serving in each MPC of our sample by year, and built a panel to evaluate which individual characteristics are associated with a better outcome for monetary policy. Our results show that many individual characteristics influence the outcome of monetary policy. A larger number of PhDs in economics within an MPC is associated with a lower inflation level and volatility, but also to a larger trade-off between growth and inflation. In addition, a greater proportion of women in MPCs is also related with both lower and less volatile inflation. An MPC with an average age range between 55-60 years old yields the less volatile inflation. Also, while there is evidence associating a higher share of former private sector and academia professionals with lower inflation, we found that both groups plus past multilateral organization’s employees tend to be tied to a steeper Phillips curve. We caution, though, against reading our results as causality. We though believe that our results support the understanding that policymakers’ individual characteristics should be incorporated into the analysis of monetary policy outcomes.

The remainder of this paper will be divided as follows. In section 2, we provide the description of the database, as well as an in-depth analysis of the profile of the MPCs across countries and over time. The empirical findings and a discussion of the main results of this paper is found on section 3. Finally, we conclude in section 4.

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3 According to the literature, there is a trend of central banks moving away from an individual decision towards an MPC [Blinder 2005, Blinder and Reis 2005].
2 MPC Database

We compiled a database that contains relevant and accessible characteristics of individual MPC members. This database was built gathering data from Central Banks, MPC members’ CVs or newspaper articles. We aggregated information for 439 individuals, who served as board members for 16 inflation targeting different central banks’ MPCs from 1999 to 2018. It is possible to split the individual characteristics in three different groups: (i) demographics, (ii) educational background, and (iii) professional background. Most of the variables are self explanatory, built as dummy variables, but we discuss in further detail in the Appendix.

Table 1: Descriptive statistics

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Educational Background</th>
<th>Professional Experience</th>
<th>Year of Experience in MPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female Members</td>
<td>Age</td>
<td>Bachelor in Economics</td>
<td>Bachelor in Law</td>
</tr>
<tr>
<td>USA</td>
<td>19.1</td>
<td>58.4</td>
<td>75.9</td>
</tr>
<tr>
<td>SNA</td>
<td>4.3</td>
<td>59.7</td>
<td>59.5</td>
</tr>
<tr>
<td>NZL</td>
<td>6.9</td>
<td>59.8</td>
<td>100.0</td>
</tr>
<tr>
<td>SWE</td>
<td>40.5</td>
<td>55.8</td>
<td>95.3</td>
</tr>
<tr>
<td>POL</td>
<td>15.8</td>
<td>58.9</td>
<td>86.5</td>
</tr>
<tr>
<td>ISR</td>
<td>11.6</td>
<td>63.5</td>
<td>100.0</td>
</tr>
<tr>
<td>CBI</td>
<td>17.2</td>
<td>53.4</td>
<td>87.6</td>
</tr>
<tr>
<td>MEX</td>
<td>1.6</td>
<td>57.1</td>
<td>76.0</td>
</tr>
<tr>
<td>CHL</td>
<td>6.0</td>
<td>53.4</td>
<td>90.0</td>
</tr>
<tr>
<td>EUR</td>
<td>4.9</td>
<td>50.4</td>
<td>66.1</td>
</tr>
<tr>
<td>HSL</td>
<td>10.9</td>
<td>56.4</td>
<td>63.1</td>
</tr>
<tr>
<td>CEE</td>
<td>9.6</td>
<td>45.6</td>
<td>82.3</td>
</tr>
<tr>
<td>CAD</td>
<td>23.2</td>
<td>54.0</td>
<td>94.4</td>
</tr>
<tr>
<td>AUS</td>
<td>19.4</td>
<td>57.9</td>
<td>72.0</td>
</tr>
<tr>
<td>COL</td>
<td>4.3</td>
<td>54.2</td>
<td>70.2</td>
</tr>
<tr>
<td>MCR</td>
<td>33.0</td>
<td>53.8</td>
<td>86.2</td>
</tr>
</tbody>
</table>

Table 1 provides summary statistics of MPC members across time for each country, where we average out individual characteristics by year for the respective members. Any participating member in a given year is included for the average member statistic by year. We see many interesting facts, such as the discrepancy on the share of PhD holders or the share of women on the board across countries.

Idiosyncratic and country-specific characteristics can be evaluated in the table, but we want to stress some global trends that we see in the table 2. To summarize, it is possible to note the heterogeneity in the is the composition of each Central Bank’s MPC that we surveyed. Central Banks do not follow a single predetermined rule to define their MPC composition, on the contrary: MPCs around the world have idiosyncrasies in their composition,
making them very diverse between one and another. However, this also means that many are skewed to be composed by a specific group of people, sharing similar backgrounds that could reinforce group thinking.

Table 2: Global Trends in Monetary Policy Committees

<table>
<thead>
<tr>
<th></th>
<th>Demographics</th>
<th>Academic Background</th>
<th>Professional Experience</th>
<th>Years of Experience in MPC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Age</td>
<td>Bachelors in Economics</td>
<td>Bachelors in Law</td>
</tr>
<tr>
<td></td>
<td>Members</td>
<td></td>
<td>Other Bachelor Degree</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>0.10</td>
<td>53.3</td>
<td>0.81</td>
<td>0.12</td>
</tr>
<tr>
<td>2000</td>
<td>0.11</td>
<td>54.0</td>
<td>0.82</td>
<td>0.10</td>
</tr>
<tr>
<td>2001</td>
<td>0.11</td>
<td>54.6</td>
<td>0.81</td>
<td>0.07</td>
</tr>
<tr>
<td>2002</td>
<td>0.13</td>
<td>54.5</td>
<td>0.80</td>
<td>0.10</td>
</tr>
<tr>
<td>2003</td>
<td>0.13</td>
<td>55.1</td>
<td>0.79</td>
<td>0.13</td>
</tr>
<tr>
<td>2004</td>
<td>0.13</td>
<td>56.1</td>
<td>0.81</td>
<td>0.12</td>
</tr>
<tr>
<td>2005</td>
<td>0.13</td>
<td>55.5</td>
<td>0.82</td>
<td>0.10</td>
</tr>
<tr>
<td>2006</td>
<td>0.11</td>
<td>55.1</td>
<td>0.84</td>
<td>0.09</td>
</tr>
<tr>
<td>2007</td>
<td>0.11</td>
<td>55.3</td>
<td>0.84</td>
<td>0.09</td>
</tr>
<tr>
<td>2008</td>
<td>0.10</td>
<td>56.1</td>
<td>0.85</td>
<td>0.09</td>
</tr>
<tr>
<td>2009</td>
<td>0.09</td>
<td>55.7</td>
<td>0.85</td>
<td>0.09</td>
</tr>
<tr>
<td>2010</td>
<td>0.11</td>
<td>56.1</td>
<td>0.85</td>
<td>0.09</td>
</tr>
<tr>
<td>2011</td>
<td>0.13</td>
<td>56.3</td>
<td>0.86</td>
<td>0.10</td>
</tr>
<tr>
<td>2012</td>
<td>0.15</td>
<td>56.4</td>
<td>0.88</td>
<td>0.07</td>
</tr>
<tr>
<td>2013</td>
<td>0.16</td>
<td>55.9</td>
<td>0.86</td>
<td>0.04</td>
</tr>
<tr>
<td>2014</td>
<td>0.20</td>
<td>56.6</td>
<td>0.85</td>
<td>0.05</td>
</tr>
<tr>
<td>2015</td>
<td>0.19</td>
<td>57.3</td>
<td>0.85</td>
<td>0.05</td>
</tr>
<tr>
<td>2016</td>
<td>0.19</td>
<td>57.1</td>
<td>0.86</td>
<td>0.06</td>
</tr>
<tr>
<td>2017</td>
<td>0.19</td>
<td>57.3</td>
<td>0.83</td>
<td>0.07</td>
</tr>
<tr>
<td>2018</td>
<td>0.21</td>
<td>56.6</td>
<td>0.84</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Below, we stress a couple of facts that we depict from the table:

1. Even though women are still minority in most MPCs, their average share has been rising in the last decade, coming from 9% in 2009 to 21% in 2018.
2. There is an increasing trend in the average age of MPC members in our sample of MPCs, going from around 53 years in 1999 to around 57 years in 2018.
3. The average share of members with bachelor degrees other than economics and law has been falling, from 27% in 1999 to 14% in 2018.
4. The share of members with a masters in economics as their highest degree more than doubled from 10% in 1999 to 22% in 2018, while the share of PhDs is falling slightly from 62% to 53% in the same period.
5. After dropping below 30% in the early 2000’s, the average share of members with a background in academia edged higher to around 40% in the last 10 years; and,
6. There is a falling trend for the average share of former public employees, dropping from 39% in 2003 to 23% in 2018.

3 Panel Data Analysis and Empirical Results

In this section, we present the main findings of our panel analysis relating the compositional characteristics of the MPCs to the performance of monetary policy. We will use five different dependent variables in our models:

1. the annual inflation rate retrieved from the IMF world economic outlook, similar to the approach used in the works of Göhlmann and Vaubel 2007 and Farvaque et al. 2011

2. the year-end core inflation, retrieved from Haver Analytics

3. the absolute value of the difference between the aforementioned core inflation rate and the inflation target pursued by the central bank

4. the rolling five-year standard deviation of the quarterly year-over-year core inflation rate

5. the trade-off rate between output and inflation – i.e., the beta related to the output gap in a Phillips Curve, taken from a rolling regression

For each dependent variable we ran a fixed effects panel regression, where the cross section dimension is on countries and the time dimension is annual. We regress them against control variables and the MPCs members’ mean characteristics.

For each dependent variable, five different models were estimated: the first with all MPC characteristics simultaneously, the second only the educational background block, the third only with the demographics group, the fourth with only the professional background. 

\footnote{We estimated the models following the approach proposed by Arellano and Bond 1991 and then extended in others as in Arellano and Bover 1995}
block, and, finally, the fifth with only the size of the committee. This means that we have, for each given variable, the restricted model (using only the respective block of variables) or the unrestricted model (using all variables’ blocks)  

For the control variables we use the lagged output gap and the annual change in commodity prices in local currency. The idea is that the output gap should control for demand shocks and the commodity prices for supply shock in the inflation rate. To construct the output gap, we used a Hodrick-Prescott filter in the quarterly real GDP data, for each country.  

We describe each and every result in our appendix, but we choose to provide a summary of our main findings in Table 2, where it is possible to see which variables have significant coefficients across the different models. Regarding academic background, the most relevant result is that the coefficient associated with the proportion of PhDs in the MPC is significant in all the models. The results are consistent with a higher share of PhDs reducing the level, the deviation from the target and, finally, the standard deviation of the inflation rate, suggesting that a board populated with experts in economics tends to generate a better outcome for monetary policy. For the slope of the Phillips curve, our results point to PhDs being correlating with higher tradeoff between output and inflation, or a flatter Phillips curve. Researchers are still trying to understand the reasons for the flattening of the Phillips Curve in recent years, and one possible reason could be due to a better anchoring of inflation expectations (BERNANKE, 2007). If this is true, given our previous finding that a higher

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5For ease of understanding, our way of presenting is not the standard one - the different rows of the column on the restricted model actually refer to different regressions: the coefficient of ”age”, for instance, relates to a regression using only demographic variables, while the coefficient of ”private sector” refers to a regression using only professional background variables. Hence, we leave in the table only the regression coefficients, but auxiliary statistics for each of the regressions can be sent by request and we elaborate more in the appendix.

6In order to avoid possible border effects, the series with each country real GDP, from 1994 to 2018, were chained with IMF’s forecasts from 2019 to 2023, so the filtered series go from 1994 to 2023. The output gap is the difference between the observed GDP and the smoothed series as the percentage of the latter. The series used for the commodity prices is de the Goldman Sachs Commodity Price Index. This series is an index based on commodities prices quoted in US dollars, so it was converted to the local currency of each country other than the US. All the data used to calculate the local currency commodity prices is averaged annually and it was retrieved from Bloomberg (both the Goldman Sachs Commodity Price Index and the foreign exchange rates).
percentage of PhD MPC members is associated with a smaller deviation of inflation from target, then one hypothesis for the negative relationship between the slope of the Phillips curve and the proportion of PhDs in MPCs is that more PhD are also correlated with better anchored inflation expectations. However, this is just speculative and testing this hypothesis is beyond the scope of the current study.

Table 3: Summary of results

We summarize the variables of interest in table 4 to see which variables are more significant and how robust are the results that we found.
For the demographics block of variables, the results are mixed. Both the average age of the MPC and the proportion of women are statistically relevant in three out of five models. The results indicate that an MPC with an average age between 55 and 58 years has the lowest inflation volatility, with a lower absolute deviation from the inflation target and a lower standard deviation. A similar range was found for the committee’s age associated with a steeper Phillips curve, or the MPC average age that has the minimum tradeoff between activity and inflation. In addition, we found that a higher proportion of women inside the MPCs are linked to a lower level and also to a lower standard deviation of inflation. Since the majority of MPCs are still dominated by men, these results indicate that a more diverse and inclusive committee would be a positive development for the monetary policy debate.

Table 4: Summary of results - stylized
In the professional background block, we highlight the results for three variables. First, a higher proportion of members with a background in the Academia is linked to a lower level of inflation and a steeper Phillips Curve, but a higher volatility of inflation – with the coefficients that allow us to draw such conclusions being significant at a 10% level. Second, more former multilateral organizations within MPCs is associated with both a higher level and volatility of inflation. One possible explanation for this is that nominations to multilateral organizations may be partisan, which could imply less independent MPC members, but we do not observe whether such members are more hawkish or dovish. However, we would caution that the results for that variable are not very robust in our specifications, and in many occasions only significant at a relatively high level. Finally, a higher fraction of past private sector employees is related with a lower level of inflation, as well as with a steeper Phillips curve. It is interesting to note that it is hard to define the best profile of central bankers based only on his/her past work experience, with results tentatively pointing towards a preference for former academia and private sector workers.

The last set of results is on the optimum size of the MPC. Our exercise show that the number of members of the MPC is not related with the inflation level, but points that a larger committee would be associated with a lower volatility of inflation and a flatter Phillips curve. Once again, it is important to highlight that those results seem to be influenced by the Fed and the ECB, the two largest MPCs in our sample. Once we remove them from our regression sample, the results are not conclusive for the influence of the MPC size.

4 Conclusion

In this paper we expanded the literature that associates the personal profile of the individual members of the MPCs with the performance of monetary policy in two ways. First, we created a new database that aggregate the individual characteristics of MPC members for a larger number of central banks and also for a more recent period. Our database contains
information for 439 individuals, who served as board members on 16 different central bank MPCs from 1999 to 2018. Second, we extended the results of the effects of the average MPC profile beyond only its relationship with the inflation level, but also studying how it could be linked with the absolute deviation of the inflation target, inflation standard deviation and the slope of the Phillips curve.

Our results show that the individual characteristics of the members that forms an MPC are relevant for the performance of monetary policy. The main results that we found were: (i) higher proportion of members with PhD in economics is associated with a lower inflation level and volatility, but related to a flatter Phillips curve, (ii) more women as MPC members are related with both lower and less volatile inflation, (iii) the average MPC age inside a range between 55 and 60 years seems to be linked with less volatile inflation, and (iv) there is evidence associating a higher share of MPC member with former experience in the private sector and in academia with lower inflation, and also that both groups plus past multilateral organizations employees tend to be tied to a lower tradeoff between output and inflation, or a steeper Phillips curve.

Even though our findings point in the direction of a link between the profile of the members of an MPC with the performance of the monetary policy, our results are merely associative and do not provide a causal relationship between both. Beyond the individual characteristics of the policy makers, many other factors are in play in order to generate a better or worse outcome for monetary policy. Factors such as the central bank independence from the government, the institutional framework where it operates, the decision-making process within an MPC, the degree of transparency, among others, are likely also in play and could even generate a selection bias on the profile of the members chosen to be part of the MPC. Still, this work sheds light that individual characteristics are related to monetary policy outcomes and such dimension should be included in further analysis.
References


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Christina D. Romer and David H. Romer. Choosing the federal reserve chair: Lessons from history, 12 2004. ISSN 08953309.

Appendix 1 - Database

This database contains information only for inflation targeting central banks and includes: the Federal Reserve (Fed), Bank of England (BoE), Central Bank of Brazil (BCB), Reserve Bank of New Zealand (RBNZ), Sveriges Riksbank, National Bank of Poland (NBP), Bank of Israel (BoI), Bank of Mexico (Banxico), Central Bank of Chile (BCCh), European Central Bank (ECB), Central Bank of Iceland (CBI), Czech National Bank (CNB), Bank of Canada (BoC), Reserve Bank of Australia (RBA), Norges Bank, and Colombian Bank of the Republic (BanRep). There are two main reasons for selecting the start of the database: in 1999 almost all central banks were adopting inflation targeting regimes, formally or informally; and, by then we already have more complete online resources, allowing to find complete information on MPC members.

It is possible to arrange the individual characteristics in three different groups: (i) demographics, (ii) educational background, and (iii) professional background. The demographics group encompasses information such as the share of women and median age of each MPC member. The variable gender will be the proportion of women inside the MPC. The same approach will be followed to the experience of the individual in the MPC, with a variable that counts 1 for the first year the individual has joined the board and will increase as time goes by (note that if one member leaves and then rejoins the same MPC his/her experience will resume as if he/she has never left).

In the educational background group, the characteristics refer to the individuals’ bachelor degree, with the variables Economics and Law assuming the value 1 if he/she has a bachelor degree in the respective field (note that if the individual has more than one degree he/she will be classified in more than one category). Additionally, we will investigate the postgraduate background of MPC members. Hence, variables PhD and MSc will be 1 if the individual has a doctoral or a master’s degree in economics, respectively (note that it will be counted only the highest degree, so MSc and PhD cannot be 1 simultaneously). Lastly, the variable MBA maps if the individual has an MBA title, since many MBAs provide a consid-
erable background in finance, but not in economics, it will be used as a separate variable, we believe this approach allow us to differentiate members with formal training in economics from those with a more generic background of skills.

The professional background group sorts each individuals’ past professional experience. We divided in five categories that could be relevant to our analysis: (i) private sector, (ii) academia, (iii) public sector, (iv) multilateral organizations, and (v) central bank staff. Since one person may have gone through different jobs, the same individual can be classified in multiple categories. Nonetheless, we attempted to be parsimonious in the categorization: only professional experiences that we judged to be relevant were considered.
Appendix 2 - Results

4.1 Results for Inflation Level

The variables related to higher educational levels have negative and significant coefficients for both the general model (1.1) and the model that includes only the educational background (1.2). We verified a negative and significant coefficient for the variables Master and PhD in equation (1.1), and also for MBA in the restricted model (1.2) this implies that a higher proportion of members with a Masters or PhD degree in economics, or on MBA are associated, on average, to lower inflation. Those findings are not surprising, given that in the last twenty years we saw the consolidation of the inflation-targeting framework, being reasonable to assume that higher training in economics makes people more committed to its importance, hence avoiding the higher inflation from the 1980’s and early 90’s.

Our results show that the coefficients for the gender variable are negative and significant for both model (1.1) and model (1.3), meaning that a higher proportion of women the MPC is linked to lower inflation, i.e. a more hawkish stance of the Central Bank. These results are also in line with the findings of Diouf Pépin (2017), that women central bankers put more emphasis on stabilizing inflation vis-à-vis output than men. As pointed by Masciandaro, Profeta Romelli (2016), a higher proportion of women could be a sign of prudence in how the MPC implements monetary policy.

The last finding is tentative evidence that a higher proportion of MPC members with a background in academia is connected to a lower inflation rate on average and the contrary in the case for a background in multilateral organizations. The coefficient for academia background is significant at a 5% level in equation (1.4), but is not in the unrestricted model (1.1). This may be due to fact that the background in academia is correlated with members with PhD, so the justification is the same as the above. For the positive relationship between multilateral organizations and the inflation rate, a reason could be that appointments to those jobs are in many cases political, so that could imply an MPC member less independent from
a political point of view.

The second model that was estimated used the level of core inflation as the dependent variable. Using core inflation as a dependent variable is an important exercise of robustness for the results using the level of headline inflation because core inflation is less volatile, and for that reason less subject to noise that was not captured by our control variables. The main results (Table 5) for core inflation are roughly similar to the ones extracted from the model that has headline inflation as the dependent variable. The coefficient of the variable PhD is still negative and significant, at a significance level of 10%, for the restricted model (2.2). The same is true for the gender variable: its coefficient is still significant in model (2.3), but no longer significant in the unrestricted model (2.1).

For the professional background block, the academia background variable is negative and significant in both the restricted (2.4) and unrestricted (2.1) models, and with a higher significance than in the models using headline inflation. Another result worth mentioning is the significance of both private sector background and central bank staff, the first in the restricted and unrestricted models and the second only in the latter. This outcome is in line with the ones in Farvaque, Hammadou Stanek (2010), and for the case of central bank staff also consistent with the results of Gohmann Vaubel (2007), that a higher proportion of former staff employees in the MPC is associated with lower inflation.

4.2 Results for Inflation volatility

The studies in the literature we surveyed used only the level of inflation as the dependent variable (FARVAQUE, HAMMADOU STANEK, 2010 and GOHLMANN VAUBEL, 2007). However, since we are looking at Inflation Targeting Central Banks, the more direct approach would be to compare with the deviation of the target. With this in mind, we use the absolute value of the difference between the core inflation and the inflation target as dependent variable7. Even though most central bank’s target headline inflation rate, core filters much of the noise from temporary price shocks that an inflation targeting central bank usually
ignores. It is also important to point out that we will also use the absolute value for the control variables.

The results show that, considering the educational background, the variable PhD is once again negative and significant in both the restricted model (3.2) and the unrestricted one (3.1), meaning that a higher proportion of members with a PhD background is connected to a lower absolute deviation from the inflation target on average. A background in Law shows a negative and significant relationship with the deviation of the inflation in the unrestricted (3.1) model, as the variable Master in the case for the restricted model (3.2).

The demographic block shows the average age of the MPC being significant, for both the linear and the quadratic term. In addition, the signal of the quadratic term is positive, meaning that there exists a level of the average age of the MPC associated with a minimum absolute deviation of inflation, that age being around 55 years. Coincidentally, the minimum deviation age is very close to the average MPC age along our entire sample. The variable Experience is significant (at a level of 10%), but the results are the contrary to which we expected, meaning a positive relationship in the case of the restricted model (3.3), and a concave quadratic relationship in the case of the unrestricted model (3.1), with maximum around 6.3 years. It is hard to interpret this last result, especially given that the relationship is only significant at a level of 10%, hence we are cautious about extracting conclusions from that evidence.

Other results from the professional background block are that both a higher proportion of MPC members with a background in the public sector and with a background in the central bank staff are positively related with the absolute deviation of inflation. We did not find strong evidence to support a meaningful effect of those variables in the inflation level. However, given that previous research (FARVAQUE, HAMMADOU STANEK, 2010 and GOHLMANN VAUBEL, 2007) found a positive relationship between the inflation level and the proportion of former public servants in the MPCs and a negative relationship between the former and the proportion of past central bank employees, the results we presented
could have diverse meaning. When it comes to central bank staff, the absolute deviation relationship could be due to an undershooting of the inflation rate. For the public sector, meanwhile, such behavior could be due to an overshoot. Either way, our results support the view that a higher proportion of both former central bank staff or public employees is linked to larger misses from the inflation target.

Finally, model (3.5) has both the linear and quadratic terms for the size of the MPC as significant. Since the coefficient of the quadratic term of the MPC size is positive, the relationship between MPC size and inflation deviation is convex, meaning a minimum point. Model (3.5) suggests the MPC size consistent with the minimum average inflation deviation to be around 17 members, which is much larger than other similar studies such as Farvaque, Hammadou Stanek (2010) and Berger Nitsch (2011) that find this number being between five to ten members. Our results could be influenced by the two largest MPC boards, the ECB and the Fed with 25 and 19 members, respectively. However, running the model without both of them gives an inconclusive result.

In addition to the deviation from the target, we will also look at the five-year rolling standard deviation of the quarterly year-over-year core inflation as dependent variable. The results in Table 7 are broadly consistent with our previous findings. In the educational background block of variables, the share of PhDs in the MPC is significant and with a negative coefficient in both restricted (4.2) and unrestricted (4.1) models. This means that as the proportion of PhD members increases, the standard deviation of inflation decreases. Combined with our previous results indicates that an MPC with more PhDs is related not only to a lower inflation level, but also a smaller deviation from the target and lower inflation volatility.

Moving on to the demographics block, the variable gender also proved significant (at a 10% level) with a negative sign, providing tentative evidence that the higher the share of women in the MPC, the lower the inflation volatility, on average. The average age of the MPC had a significant quadratic relationship with the inflation standard deviation of
inflation, and an optimal minimum point around 58 years.

The professional background variables were only significant of a 10% level for both academia and multilateral organizations, which also presented a positive coefficient. Finally, the MPC size was significant for both the linear and quadratic terms. The coefficient of the quadratic term was positive, meaning a convex relationship with inflation volatility. Once again, the number of MPC members that is consistent with the minimum inflation standard deviation is 19, removing the two largest MPCs from our sample makes the coefficients non-significant, providing evidence that our results may be influenced by the two outlier MPCs in terms of size.

4.3 Results for the Phillips Curve Rolling Beta Coefficients

To test if the MPC composition has any relationship with the slope of the Phillips Curve we designed this variable using the rolling coefficients of a Phillips Curve on the year-over-year core inflation rate, its lag and the lag of the output gap and a constant term. We used quarterly data since 1996 with a 20 quarters rolling sample, storing the estimated coefficient for the last quarter of each year. This procedure caused our panel sample losing two years going from 2001 to 2018. In addition, different countries have different lags between output gap and the inflation rate, so we ran four different models using one to four lags of the output gap and took the average of them.

The results show a negative and significant relationship between the slope of the Phillips curve and the proportion of MPC members with a PhD in economics, being true for both the restricted (5.2) and unrestricted (5.1) models. This negative relationship implies that the higher the share of PhD members inside an MPC, the higher the trade-off between output and inflation, on average.

For both, the Age (5.3) and MPC size (5.5) we found a significant and convex relationship with the slope of the Phillips curve, suggesting a minimum point exists. The mean age of an MPC associated with the lowest Phillips curve coefficient is around 58, very similar to
the results for the smallest standard deviation of inflation.

An MPC of around 14 members is the size for the lowest average Phillips curve slope. This size is still larger than most MPCs, except the ECB and the Fed13.

Regarding the professional background block of variables, only the background on the public sector does not have a significant coefficient. The share of MPC members with a background in the academia, private sector, multilateral organizations and central bank staff presented a positive relationship with the slope of the Phillips curve, suggesting the higher their share, the lower the output cost to control inflation. One puzzling point is that the coefficient of the background in academia has the opposite sign of the PhD one, which is curious, given that they are relatively well correlated and presented the same sign in other models where the two were significant.