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The educational and occupational background of central bankers and its effect on inflation: An empirical analysis

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Abstract

We test the hypothesis that the inflation preferences of central bankers depend on their educational and/or occupational background. In a panel data analysis for the euro area and eleven countries since 1973, we explain inflation either by the weights with which the educational and occupational characteristics of the 391 council members were represented in the various central bank councils or by the education or occupation of the median council members. Control variables are added. Our most robust result is that former members of the central bank staff prefer significantly lower inflation rates than former politicians do.

JEL classification: E42; E58

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1. Introduction

When central banks are independent with regard to monetary policy, the outcome depends on the policy preferences of the central bankers. What shapes their preferences?

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Several factors have been discussed and analyzed in the literature. First, central bankers may be influenced by public opinion as expressed in the media (e.g., Havrilesky, 1993; Froyen et al., 1997; Maier et al., 2002; Maier and Bezoen, 2004; Maier and Knaap, 2003) or in opinion surveys (Hayo, 1998; Vaubel, 2003). Second, they may respond to the demands of specific interest groups (e.g., Havrilesky, 1990; Posen, 1993a, b; Hefeker, 1997). Third, they may feel loyal to the party which has appointed them (McGregor, 1996; Vaubel, 1993, 1997a, b). Fourth, they may pay attention to the wishes of the current government even though they enjoy policy independence (e.g., Nordhaus, 1975). Fifth, their views may have been shaped by their education and their occupational background (Gildea, 1990; Havrilesky and Gildea 1991a, b, 1992; Chappell et al., 1995).

In this paper, we present the first multi-country analysis of whether and how the education and occupational career of central bankers affect their inflation performance. This question is important because, if we want to appoint "conservative central bankers" (Rogoff, 1985), we have to know who is likely to be a conservative central banker. We assume that central banks—with a lag of two to three years—can control inflation fairly closely by using their monetary policy instruments.[1] This presupposes that they know quite well how the demand for (central bank) money is changing over time. Education and occupational career affect the inflation performance of central bankers because they convey knowledge about the causes and effects of inflation. In addition, professional experience may generate personal loyalties to special interest groups: a profession or industry, a party, a bureaucracy, an income group etc.

We have collected data on the educational and occupational histories of 391 central bank council members from 10 European countries and the US since 1973 and for the European Central Bank since 1999.[2] We estimate cross-section time-series regressions which also allow for the independence of the central bank, the exchange rate regime, the unemployment rate, output growth and the electoral cycle.

We shall not present theoretical hypotheses at the outset because this is an essentially empirical question. However, we shall comment on our empirical results and offer conjectures about why they are as they are.

Our main finding is that, with a flexible exchange rate and central bank independence, former members of the central bank staff bring about lower inflation rates than all the other occupational groups do. The difference is statistically significant as compared with former politicians, non-ministerial civil servants and economic scholars. With regard to education, former students of law prefer significantly higher inflation rates than students of economics do if at the same time all former occupations are taken into account. These results may be helpful to those who appoint central bank council members in attaining their desired inflation rates.

2. A descriptive analysis of the data

With regard to university education, we distinguish between former students of economics, business administration, lawyers, engineers and other subjects. As for occupational background, (private) bankers, insurance executives, (other) businessmen,

[1]For a recent demonstration that the trend of monetary expansion relative to the trend of output growth is a good predictor of the inflation rate see Neumann et al. (2004).

[2]The data for Portugal are only available from 1980 onwards.

union leaders, politicians, ministerial and other civil servants, central bank staff and economic scholars are distinguished.[3] A detailed description of these categories is presented in the Appendix).

Table 1 summarizes the educational and occupational background of the council members.[4] We have collected these data from various "Who's who?" volumes, central bank websites and personal enquiries with central banks and former central bank council members. Only four central bank members could not be classified according to education and occupation. The central bank council as defined in this paper is the body charged to "formulate the monetary policy … including, as appropriate, decisions relating to intermediate monetary objectives, key interest rates and the supply of reserves" (Article 12.1 of the statute of the ECB). Our sample includes only those entitled to vote. If a council member has studied more than one subject or has worked in more than one profession, we allocate equal fractions to these different backgrounds. As for occupation, we distinguish between the last position prior to being appointed to the council and the whole previous career.

With regard to education, Table 1 reveals that economists used to have an absolute majority in the central banks of Denmark, Portugal, the United States, the Netherlands, the European Monetary Union, Germany and Finland (in descending order). They were also the largest group in Belgium and the UK. By contrast, the largest group in the French and Austrian central bank councils had studied law. A law background is also quite frequent (accounting for more than 30%) in the Netherlands, Switzerland and Finland. Twenty percent or more of the "knowns" in the Austrian, the US and the UK central bank councils have studied business. Ten percent or more of the "knowns" in France, Austria, the UK and Belgium have a degree in engineering.

Table 2 averages these shares over all central banks in 1973–1998 (i.e., excluding the ECB). As can be seen, the largest group (44% of the central bankers) had studied economics, 24% had read law, 15% business administration and 6% engineering. Over time, the economists have increased their share. Our data show that this is true for all 11 central banks except Finland, most of all for the Dutch, Danish and Austrian central banks and least for the Bundesbank and the Bank of England. The share of former law students has declined.

Members with an economics degree take a considerably higher share in the ECB Council (62%) than, on average, in the member central banks covered by our analysis (1991–1998: 54%). How can this difference be explained? The ECB Council is composed of the twelve national central bank governors and six executive directors. While the national central bank councils contain quite a few non-economists, the governor is usually an economist, and, for the Board of Executive Directors, candidates with a good economics training are also more likely to be proposed and accepted.

We now turn to the occupational background and focus on the last position before the appointment to the central bank council because this proves to have a more significant explanatory power in our econometric analysis. As Table 2 indicates, the largest groups are

[3]Note that our distinctions are considerably more detailed than in the work of Gildea, Havrilesky et al.

[4]The numbers in the Table indicate the percentages of total man years in the council accounted for by each background. The percentages sum to 100 in each column in each panel (except for rounding errors). The last row indicates the compound average rate of consumer price inflation lagged two years, i.e., from 1975 to 2000 or, for the ECB, from 2001 to 2003.

Table 1
Descriptive statistics by central banks (percentages)

Country or EMU	Austria (1973–1998)	Belgium (1973–1998)	Denmark (1973–1998)	Germany (1973–1998)	Finland (1973–1998)	France (1973–1998)	Netherlands (1973–1998)	Portugal (1980–1998)	Switzerland (1973–1998)	UK (1973–1998)	US (1973–1998)	ECB (1999–2003)
Education												
Economics	15	48	91	56	54	25	64	82	54	24	64	62
Business	33	17	9	17	3	1	0	4	13	16	22	4
Law	36	19	0	20	32	35	36	13	33	22	7	18
Engineering	12	10	0	0	0	12	0	0	0	9	1	6
Others	1	7	0	7	11	27	0	1	0	9	6	4
Unknown	3	0	0	0	0	0	0	0	0	19	0	6
Occupation considering whole career												
Banker	14	3	33	12	11	8	15	25	28	18	20	9
Insurance executive	14	0	0	0	0	1	0	0	0	3	0	0
Businessman	26	2	0	3	8	11	1	4	1	33	13	2
Farmer	2	0	0	0	0	4	0	0	0	0	0	0
Lawyer	1	1	0	0	5	0	0	1	4	3	2	2
Economic scholar	1	6	13	13	0	14	14	27	6	7	25	20
Central bank staff	3	30	23	16	10	11	52	9	35	16	17	23
Union leader	13	0	0	1	0	10	0	0	0	6	0	0
Ministerial civil servant	5	31	17	23	26	27	9	15	11	4	6	25
Other civil servant	11	18	14	19	9	14	3	11	15	9	16	10
Politician	5	8	0	13	31	1	6	8	0	1	1	6
Unknown	4	0	0	0	0	0	0	0	0	0	0	3

Occupation considering only last position												
Banker	17	9	57	9	21	8	17	26	22	22	24	13
Insurance executive	19	0	0	0	0	3	0	0	0	5	0	0
Businessman	27	0	0	1	10	15	0	7	0	38	14	0
Farmer	3	0	0	0	0	3	0	0	0	0	0	0
Lawyer	0	0	0	0	0	0	0	0	0	0	0	0
Economic scholar	0	6	14	16	0	14	3	8	11	4	27	12
Central bank staff	1	28	22	19	16	13	54	1	37	23	15	30
Union leader	12	0	0	0	0	12	0	0	0	5	0	0
Ministerial civil servant	0	26	5	19	11	25	14	15	1	0	8	25
Other civil servant	9	16	2	16	3	6	0	27	29	4	13	5
Politician	9	15	0	19	39	2	12	16	0	0	0	12
Unknown	4	0	0	0	0	0	0	0	0	0	0	3
Inflation per annum, lag of 2 years	3.6	2.8	5.4	2.9	6.0	5.5	3.4	13.2	2.8	7.3	4.9	2.2

Table 2
Overall averages and intertemporal comparison

	1973–1981	1982–1990	1991–1998	1973–1998
Education				
Economics	35	48	49	44
Business	14	13	17	15
Law	32	23	18	24
Engineering	5	6	6	6
Others	8	8	7	8
Unknown	5	3	3	4
Occupation considering only last position				
Banker	18	17	16	17
Insurance executive	2	4	6	4
Businessman	13	14	17	15
Farmer	0	1	0	1
Lawyer	0	0	0	0
Economic scholar	9	8	11	10
Central bank staff	22	18	14	18
Union leader	4	4	3	4
Ministerial civil servant	11	13	10	11
Other civil servant	12	10	9	10
Politician	7	10	12	10
Unkown	1	0	1	1

former central bank staff, former (private) bankers and (other) businessmen. However, over time, the proportion of former central bank staff and former bankers has been declining while businessmen, politicians and economic scholars have increased their share.

To give more structure to the analysis, Table 3 aggregates these data in four groups: private sector background (bankers, insurance executives, businessmen, farmers, practicing lawyers) and public or political sector background, and within the public or political sector we distinguish between monetary policy experts (central bankers, economic scholars) and non-experts (politicians, union leaders and civil servants[5]). The group from the private sector had a majority in Austria, the UK and Denmark. It was smallest in Belgium, Germany, EMU and the Netherlands. Within the public or political sector, the group of monetary policy experts (central bankers, economic scholars) occupied the largest share in the Netherlands (57%), Switzerland (48%), the EMU (43%) and the US (42%). Non-experts from the public sector had the majority in Portugal (58%), Belgium (57%), Germany (54%) and Finland (53%).

3. Panel data analysis

We estimate cross-section time-series regressions. The first specification includes only observations with an independent central bank[6] and a flexible exchange rate regime

[5]The civil servants, especially if they come from the Ministry of Finance, are not necessarily non-experts but we think that this is more likely to be true than not.

[6]Our definition of central bank independence is based on Masciandaro and Spinelli (1994) who provide ranking indices of functional independence for the 21 OECD central banks. With our sample of countries, the number of

Table 3
Professional background, last position (percentages[a])

	Private sector[b]	Public sector Public sector total	Monetary policy experts[c]	Non-experts[d]
Austria	69	32	1	31
Belgium	9	91	34	57
Denmark	57	43	36	7
Germany	10	89	35	54
Finland	31	69	16	53
France	29	72	27	45
Netherlands	17	83	57	26
Portugal	33	67	9	58
Switzerland	22	78	48	30
UK	65	36	27	9
US	38	63	42	21
ECB[e]	14	86	43	43

[a]Excluding "others" and "unknowns".
[b]Bankers, insurance executives, businessmen, farmers.
[c]Central bankers, economic scholars.
[d]Politicians, union leaders, civil servants.
[e]1999–2001.

because only under these conditions can the inflation preferences of central bankers freely determine their monetary policy decisions. We classify the exchange rate regime as flexible when there is no parity or reference rate vis-à-vis another currency or when the central bank is the hegemon of a parity system (like the German Bundesbank dominating the European Monetary System). This sample includes (selected) observations from Austria, France, Germany, the UK, the US and the European Central Bank (as will be indicated in the table). We estimate the following regression:

$$\pi_{jt} = b_0 + b_1 U_{jt-2} + b_2 E_{jt-1} + \sum_i c_i x_{ijt-2} + \theta_t + \eta_j + \varepsilon_{jt}, \quad (1)$$

where π_{jt} is the consumer price inflation in country j in year t, U_{jt-2} is the unemployment rate in country j in year $t-2$, E_{jt-1} is a dummy which takes the value 1 if $t-1$ is an election year, and zero otherwise, x_{ijt-2} is the percentage share of educational or occupational background i in country j in year $t-2$, θ is a series of time dummies, η is a series of country dummies and ε is the disturbance term.

We impose a rigid lag structure and assume that monetary policy decisions affect the inflation rate with a lag of about 2 years as many econometric estimates indicate.[7] However, the results are very similar for a 3-year lag. The regression does not include economic determinants of inflation like monetary expansion or the interest rate because we assume that central bankers either control these variables or take them into account as they employ their monetary policy instruments to attain their ideal inflation rates. However, to allow for the

(*footnote continued*)
ranks dropped from seven to six. Central banks are defined as functionally independent if they have one of the three highest ranks.

[7]Two studies of the European Central Bank (Monthly Report, July 2000 and Batini, 2002) indicate a two to three year lag. Gerlach and Svensson (2003) report a lag of 9 quarters for the euro-area.

possibility that central bankers may not aim at their ideal inflation rate, we include the unemployment rate at the time of monetary policy making ($t-2$) and a dummy for election years. In the Appendix, we also report estimates including output growth as an additional control variable. Since monetary policy affects the business cycle with a lag of about one year, the electoral dummy is defined for year $t-1$. We add dummies for each year and for each country (fixed effects) but the coefficients are not reported. The year dummies also allow for symmetric shocks (e.g., oil price changes). The country dummies capture country-specific inflation preferences (Hayo, 1998; Vaubel, 2003). The Hausman test rejects a random effects specification. Throughout, we use Newey–West standard errors which adjust for first-order autocorrelation of the residuals and for heteroskedasticity.

We are aware of the possibility that the inflation rate may affect the politicians' choice of new appointees to the central bank council. However, our estimation is not likely to be marred by reverse causation because the composition of the council affects inflation with a long lag and because, in the past, the appointing politicians had no reliable information as to how educational or occupational background determines the inflation preferences of central bankers.

By using educational and occupational shares, we implicitly follow a mean voter approach rather than a median voter approach. However, we shall indicate how these results may be used to estimate a median voter model and report some qualitative results.

Column 1 of Table 4 presents the results for a regression on unemployment, the election year dummy and educational background. The central bankers who have studied economics are used as the reference group.[8] Only former students of "other subjects" (including languages, philosophy, psychology, etc.) prefer a significantly lower inflation rate than economists do. Jointly, the explanatory educational variables are marginally insignificant at the five per cent level. Column 2 of Table 4 replicates the analysis for the occupational background as measured by the last position held before appointment to the central bank council. The reference group is politicians. Except for the union leaders, all known occupational groups have negative coefficients but, at the 5% level of significance, only former central bank staff and insurance executives prefer a significantly lower inflation rate than politicians do. The differences between former economic scholars and non-ministerial civil servants on the one hand and former central bank staff on the other are also significant. The explanatory variables are jointly significant at the 1% level.

In Column 3 of Table 4, the occupational background is measured over the whole career rather than by the last position of the council member. The coefficients of former insurance executives and central bank staff remain significantly negative and increase in size. Moreover, both types of civil servants and former bankers take large and significant negative coefficients.

Column 4 of Table 4 combines the educational and occupational background variables (last position). All educational and most occupational differences drop to insignificance. This is not surprising because the educational and the occupational variables are highly correlated. With regard to the occupational background, only former central bank staff is significantly more inflation-averse than politicians at the 5% level. The coefficients of the control variables are never significant nor do they have a qualitative effect on the background coefficients.

Column 5 of Table 4 replicates column 4 using all occupational positions. The significantly negative coefficient of former central bank staff remains. Former law students now prefer a significantly higher inflation rate than economists do.

[8]Coefficients in reference to another group can be easily computed. The results are independent of the chosen reference group.

Table 4
Regression on the educational and occupational background for an independent central bank and flexible exchange rate system—fixed effects

Variable	(1) Education	(2) Occupation (last position)	(3) Occupation (all positions)	(4) Education and occupation (last position)	(5) Education and occupation (all positions)
Unemployment	−0.104	0.344	−0.646	0.141	−0.482
	(0.39)	(0.95)	(1.50)	(0.36)	(1.50)
Election	0.436	0.460	0.225	0.511	−0.005
	(0.59)	(0.76)	(0.33)	(0.80)	(0.01)
Economics	Reference group			Reference group	Reference group
Law	0.016			0.003	0.129*
	(0.20)			(0.04)	(2.45)
Business	−0.044			0.051	0.077
	(0.68)			(1.00)	(1.40)
Unknown education	−0.095			0.041	−0.178**
	(0.88)			(0.37)	(2.36)
Other subjects	−0.132**			−0.125	0.071
	(2.25)			(1.21)	(0.91)
Engineering	−0.244			−0.035	−0.071
	(1.21)			(0.23)	(0.49)
Politicians		Reference group	Reference group	Reference group	Reference group
Union leader		0.218	−0.511	0.412	−0.496*
		(0.82)	(1.48)	(1.05)	(1.80)
Unknown profession		0.037	−0.447	−0.076	−0.286
		(0.13)	(1.55)	(0.23)	(0.95)
Economic scholar		−0.041	−0.290	−0.113	−0.081
		(0.34)	(1.56)	(1.02)	(0.53)
Businessman		−0.063	−0.298	−0.115	−0.162
		(0.50)	(1.66)	(0.93)	(1.17)
Other civil servant		−0.079	−0.583*	−0.102	−0.318
		(0.69)	(2.56)	(1.01)	(1.62)
Ministerial civil servant		−0.117	−0.516**	−0.107	−0.223
		(0.87)	(2.03)	(0.94)	(1.02)
Banker		−0.144	−0.412**	−0.165	−0.173
		(1.05)	(2.66)	(1.35)	(1.08)

Table 4 (*continued*)

Variable	(1) Education	(2) Occupation (last position)	(3) Occupation (all positions)	(4) Education and occupation (last position)	(5) Education and occupation (all positions)
Central bank staff		−0.232**	−0.489***	−0.266***	−0.483***
		(2.56)	(3.16)	(3.08)	(3.79)
Insurance executive		−0.318**	−0.527**	−0.180	0.320
		(2.20)	(2.21)	(0.89)	(1.25)
Constant	3.448	6.186	38.114	9.584	6.913
	(·)	(0.53)	(·)	(·)	(·)
F-test of joint significance of edu./occ. variables	1.84	4.60	3.55	3.31	4.17
p-value[a]	0.1220	0.0002	0.0020	0.0013	0.0002

Dependent variable: inflation rate, lag of 2 years. *significant at 10%, **significant at 5%, ***significant at 1% based on Newey-West standard errors, *t*-statistics in parentheses. Number of observations: 92 (Austria (1973–1978), France (1974, 1976–1978), Germany (1973–1998), UK (1973–1990, 1993–1998), US (1973–2001), ECB (1999–2001)). See Table A1 for a description of the variables. Regressions were estimated including country and time dummies for each year.

[a]*p*-value of the *F*-test-statistics of joint significance.

To check for the robustness of the background coefficients, we added output growth (at $t-2$) as an additional potential target of monetary policy. As Table A2 in the Appendix demonstrates, its coefficient tends to be significant but positive. Thus, it does not enter as an additional target of the reaction function but as a predictor of future inflation. Hence, it is theoretically redundant if the central bankers know how to control inflation. Moreover, the inclusion of output growth hardly affects the significance and size of the background coefficients.

We have also tried the average age of council members because it may affect their independence, their preferred inflation rate and their ability to attain it but the effect turned out to be insignificant and did not change the other results.

Our main finding that former members of the central staff bring about and apparently prefer significantly lower rates of inflation than former politicians do is in line with the results of Gildea (1990) for FOMC voting on the federal funds rate in 1960–1982. However, Havrilesky and Gildea (1991b) and Chappell et al. (1995) find that years in government and at the Federal Reserve Board significantly reduce the desired federal funds rate. In Havrilesky and Gildea (1991a), neither variable has a significant effect on FOMC voting.

The anti-inflationary penchant of former private bankers (in column 3 of Table 4) is confirmed by Havrilesky and Gildea (1991a) but not by Chappell et al. (1995). The anti-inflationary stance of both types of civil servants does not come out in the US studies because they do not distinguish between politicians and public servants.

The inflation preferences of the council members cannot exert themselves without constraint unless the exchange rate is flexible and the central bank is independent. But even if the government fixes an exchange rate parity, there will be margins of fluctuation and the central bank council may yield some power of persuasion over the minister of finance and the whole cabinet when a parity adjustment is considered. Monetary policy advice from the central bank council may even matter when the central bank lacks independence, and the central bankers' power of persuasion may depend on their educational and occupational background. Thus, as a next step, we shall simultaneously analyze four different regimes (R_k):

R_1: flexible exchange rate and independence,
R_2: fixed exchange rate and independence,
R_3: flexible exchange rate and dependence,
R_4: fixed exchange rate and dependence.

Each R_k is a dummy which is equal to 1 if the specified regime prevails and which is equal to zero otherwise. The dummies are multiplied by the educational and/or professional variables:

$$\pi_{jt} = b_0 + \sum_k b_{1k} U_{jt-2} R_{jkt-2} + \sum_k b_{2k} E_{jt-1} R_{jkt-2} + \sum_{ik} c_{ik} x_{ijt-2} R_{jkt-2} + \theta_t + \eta_j + \varepsilon_{jt}. \quad (2)$$

We expect that the impact of the educational and/or professional shares on inflation diminishes as the constraints (k) increase.

Table 5 reports the results of estimating specification (2) with regard to both education and the last occupation.[9] With a flexible exchange rate and central bank independence

[9]Empty cells are caused by dropped variables if there are no observations for this regime or if the variable is time-invariant (for example a share of constantly x per cent). Rarely, dropouts are due to collinearity.

Table 5
Regression on the educational and occupational background (last position) – fixed effects

Variable (obs.)	Flexible exchange rate and independence (92)	Fixed exchange rate and independence (98)	Flexible exchange rate and dependence (72)	Fixed exchange rate and dependence (28)
Unemployment	0.184	0.374*	−0.455*	−0.305
	(1.09)	(1.72)	(1.80)	(1.51)
Election	0.366	0.336	−0.660	−0.024
	(0.60)	(1.11)	(1.01)	(0.04)
Economics Reference group				
Law	0.001	0.138***	0.016	−0.021
	(0.03)	(3.11)	(0.39)	(0.44)
Business	0.032	0.019	−0.248**	
	(0.71)	(0.62)	(2.22)	
Unknown education	0.108	−0.396*		
	(1.00)	(1.84)		
Other subjects	−0.124*	−0.081**	−0.049	1.459***
	(1.78)	(2.26)	(0.96)	(3.25)
Engineering	0.075	−0.056		
	(0.69)	(0.89)		
Politicians Reference group				
Union leader	0.363	0.053		
	(1.55)	(0.59)		
Unknown profession	−0.250	0.136		
	(1.39)	(0.72)		
Economic scholar	−0.019	−0.096	−0.423***	−0.396
	(0.49)	(1.16)	(3.84)	(1.37)
Businessman	−0.010	−0.037	−0.176**	−0.841***
	(0.21)	(0.57)	(2.10)	(2.97)
Other civil servant	−0.054	−0.104**	−0.182*	−0.485
	(1.01)	(2.24)	(1.92)	(1.51)
Ministerial civil servant	−0.001	−0.033	−0.259**	0.002
	(0.01)	(0.67)	(2.08)	(0.02)
Banker	−0.054	−0.113**	−0.174*	−0.026
	(1.17)	(2.25)	(1.78)	(0.14)
Central bank staff	−0.159***	−0.075	−0.128	−0.086
	(4.09)	(1.51)	(1.35)	(0.75)
Insurance executive	−0.167	−0.009		
	(1.05)	(0.10)		
Constant			3.938	
			(2.11)	
F-test of joint significance of edu./occ. variables	2.90	6.58	6.25	6.79
p-value[a]	0.0005	0.0000	0.0000	0.0000

Dependent variable: inflation rate, lag of 2 years. *significant at 10%, **significant at 5%, ***significant at 1% based on Newey–West standard errors, *t*-statistics in parentheses. Total number of observations: 291. The sample includes: R1: Austria (1973–1978), France (1974, 1976–1978), Germany (1973–1998), UK (1973–1990, 1993–1998), US (1973–2001), ECB (1999–2001); R2: Austria (1979–1998), Belgium (1973–1998), Denmark (1973–2001), France (1973, 1979–1998), UK (1991–1992); R3: Finland (1973–1998), Portugal (1980–1991, 1994–1998), Switzerland (1973–2001); R4: Portugal (1992–1993), the Netherlands (1973–1998); in total: Austria, Belgium, Germany, Finland, France, the Netherlands and UK 1973–1998, Denmark, Switzerland and US 1973–2001, Portugal 1980–1998, ECB 1999–2001). The number of observations for each regime is indicated at the head of the columns. See Table A1 for a description of the variables. Regressions were estimated including country and time dummies for each year.

[a] *p*-value of the *F*-test-statistics of joint significance.

(column 1), there remains the significantly negative effect for former central bank staff. In the other regimes, there are significantly negative coefficients for bankers, economic scholars, businessmen and both types of civil servants as well as, with regard to education, for former students of business and "other" or "unknown" subjects. By contrast, a law degree raises the rate of inflation significantly in column 2. The coefficients of the control variables are never fully significant nor do they have a qualitative effect on the background coefficients. The educational and/or occupational explanatory variables are jointly significant under each regime regardless of whether the control variables are included. To save space, we do not present the results using all positions. They are very similar, notably with regard to the significant coefficients of former central bank staff, businessmen and law students. However, the joint significance of the background variables is lower for all positions than for the last position.

So far we have used a mean voter framework instead of a median voter approach. However, central bank councils decide by simple majority and bargaining ("logrolling") between council members may be limited because the issue space tends to be one-dimensional. In principle, the regression coefficients of the share estimates can be exploited to rank the inflation preferences of the various members and to determine the education or occupation of the median member of the central bank council in each year. The inflation rates can then be regressed on dummies indicating the educational or occupational background of the median council member and on the control variables.[10]

We have tried this for regime 1.[11] With regard to education, former students of business prefer a significantly lower inflation rate than former students of economics do but the regression coefficient is implausibly large (almost 6%). With regard to occupational background (last position), former central bank staff prefers a significantly lower inflation rate than economic scholars do but once more the regression coefficient is implausibly large (almost 11%). Moreover, former bankers, other businessmen, ministerial civil servants and other civil servants are also significantly more inflation-averse than economic scholars. To save space we omit these regression results because they are merely suggestive. The implausible size of the coefficients may be due to the fact that we had to rank coefficients which are not significantly different from each other and that the council median does not change very often in this analysis.

4. A summary and some afterthoughts

The analysis leaves no doubt that the inflation rate depends on the occupational background of the members of the central bank council. If the central bank is independent and the exchange rate is flexible, former members of the central bank staff pursue the most anti-inflationary policies, whereas former union leaders and politicians are most inflation-prone. This result stands out in all specifications. Moreover, in some specifications, insurance executives, private bankers and public servants also prefer a significantly lower inflation rate than politicians do.

The effects of educational background on inflation are much less robust. If combined with the occupational variables, educational background is never significant at the 5%

[10]Educational and professional variables cannot be combined in such an analysis because the median voter model requires ranking in a single dimension.

[11]It cannot be done for more than one regime because the ranking would differ according to the regime.

level when the central bank is independent and the exchange rate is flexible. However, if the central bank is dependent or if the exchange rate is fixed, education seems to affect the ability to persuade the government. Students of law plead for a higher inflation rate, and students of business favour a lower inflation rate than economists do.

There remains a puzzle. The former members of the central bank staff, who were found to have the strongest inflation aversion, are mostly economists. Why did we not find a significantly higher inflation aversion for economists? In particular, why do economists who have worked in a central bank prefer a significantly lower inflation rate than economists from academia? There are two possible explanations. First, central banks may primarily attract economists who are monetary conservatives (''self-selection''). Alternatively, economists who work in a central bank may tend to become monetary conservatives because they are exposed to certain ideas or come to share certain vested interests (''déformation''—or rather ''formation''?—''professionnelle''). For example, they may be more inclined towards price level stability than economic scholars are because this objective is stated in the central bank statute by which they are bound or because they pay more attention to public opinion on which their independence ultimately rests.

Appendix

Description of professional background variables is presented in the Table A1.

Table A2 shows the regression on the educational and professional background for an independent central bank and flexible exchange rate system.

Table A1
Description of professional background variables

Variable	Description
Banker	Employed in a private or public bank but not a central bank
Insurance executive	Formerly working in an insurance company
Businessman	Formerly working in a business as a director or member of the executive board, or in an employers or industry association or self-employed (in the regressions also including farmers and lawyers)
Central bank staff	Formerly working in a central bank
Union leader	Formerly a leading member of a labour union
Economic scholar	Formerly a researcher at an institute or university (mostly as a professor of economics)
Ministerial civil servant	Formerly working in a ministry, includes state secretaries
Other civil servant	Formerly working in other public institutions (not central banks) or international organisations
Politician	Former minister or parliamentarian (or both)
Sources	
Consumer price inflation	World Bank statistics
Unemployment rates	OECD Outlook
Election years	http://www.wahlrecht.de/ergebnisse/bundestag.htm http://www.parties-and-elections.de http://cdp.binghamton.edu/era/countries/usa.html
Exchange rate regimes	Microsoft Encarta Encyclopedia 2000
Real GDP per capita growth	World Bank statistics

Table A2
Regression on the educational and occupational background for an independent central bank and flexible exchange rate system—fixed effects

Variable	(1) Education	(2) Occupation (last position)	(3) Occupation (all positions)	(4) Education and Occupation (last position)	(5) Education and occupation (all positions)
Real GDP p.c. growth	0.427**	0.543**	0.421	0.510**	0.401**
	(2.08)	(2.68)	(1.56)	(2.44)	(2.08)
Unemployment	−0.041	0.270	−0.576	0.157	−0.388
	(0.15)	(0.86)	(1.40)	(0.47)	(1.29)
Election	0.436	0.443	0.199	0.523	0.016
	(0.67)	(0.90)	(0.35)	(1.03)	(0.03)
Economics	Reference group			Reference group	Reference group
Law	0.027			−0.012	0.141***
	(0.36)			(0.16)	(2.80)
Business	−0.052			0.034	0.087
	(0.86)			(0.71)	(1.50)
Other subjects	−0.123**			−0.133	−0.173**
	(2.28)			(1.49)	(2.69)
Unknown education	−0.133			−0.045	0.007
	(1.25)			(0.37)	(0.07)
Engineering	−0.312			−0.085	−0.102
	(1.59)			(0.62)	(0.76)
Politicians		Reference group	Reference group	Reference group	Reference group
Union leader		0.226	−0.516*	0.462	−0.497**
		(0.93)	(1.69)	(1.31)	(2.21)
Unknown profession		0.069	−0.387	0.061	−0.142
		(0.28)	(1.50)	(0.21)	(0.54)
Economic scholar		−0.096	−0.267	−0.164	−0.059
		(0.89)	(1.50)	(1.61)	(0.39)
Businessman		−0.131	−0.310*	−0.160	−0.163
		(1.17)	(1.81)	(1.48)	(1.16)
Other public servant		−0.112	−0.579***	−0.142	−0.294
		(1.10)	(2.70)	(1.62)	(1.65)

Table A2 (*continued*)

Variable	(1) Education	(2) Occupation (last position)	(3) Occupation (all positions)	(4) Education and Occupation (last position)	(5) Education and occupation (all positions)
Ministerial public servant		−0.165	−0.515**	−0.152	−0.22
		(1.40)	(2.14)	(1.51)	(1.12)
Banker		−0.201	−0.432***	−0.210*	−0.189
		(1.64)	(2.91)	(1.89)	(1.21)
Central bank staff		−0.250***	−0.489***	−0.283***	−0.481***
		(2.89)	(3.34)	(3.67)	(4.15)
Insurance executive		−0.490***	−0.651**	−0.372*	0.165
		(3.05)	(2.24)	(1.81)	(0.57)
Constant	4.271	10.433	39.725	13.449	7.601
	(.)	(.)	(.)	(1.15)	(.)
F-test of joint significance of edu./occ. variables	2.25	5.65	4.90	4.86	5.35
p-value[a]	0.0635	0.0000	0.0001	0.0000	0.0000

Dependent variable: inflation rate, lag of two years. *significant at 10%. **significant at 5%. ***significant at 1% based on Newey-West standard errors, *t*-statistics in parentheses. Number of observations: 92 (Austria (1973–1978), France (1974, 1976–1978), Germany (1973–1998), UK (1973–1990, 1993–1998), US (1973–2001), ECB (1999–2001)). See Table A1 for a description of the variables. Regressions were estimated including country and time dummies for each year.

[a] *p*-value of the *F*-test-statistics of joint significance.

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