



STUDIECENTRUM VOOR ECONOMISCH EN SOCIAAL ONDERZOEK

VAKGROEP MACRO-ECONOMIE

**Central Bank Independence :
only part of the inflation story**

Freddy HEYLEN*
André VAN POECK**

report 95/317

February 1995

* University of Ghent, Belgium
** University of Antwerp, UFSIA, Belgium

Universitaire Faculteiten St.-Ignatius
Prinsstraat 13 - B 2000 Antwerpen

D/1995/1169/03

Abstract

The idea that countries with an independent central bank perform better on price stability is very popular and confirmed by studies investigating the issue empirically. Yet, using the Barro-Gordon model we show that the gains from a more independent central bank are not fixed. They are larger in countries with instable governments, not committed to fixed exchange rates, and in countries where left-wing parties hold a strong position. The effect of increasing central bank independence is also shown to depend on the level of the natural unemployment rate and the slope of the short-term Phillips-curve.

Keywords :

Central bank independence; political characteristics; inflation.

CENTRAL BANK INDEPENDENCE : ONLY PART OF THE INFLATION STORY.

1. INTRODUCTION

Do countries with an independent central bank perform better with respect to price stability than others? The idea is certainly very popular and most studies that investigate the issue in an empirical way tend to confirm the existence of a negative relationship between average inflation and central bank independence, at least for certain measures of independence and some subperiods (see Alesina, 1988; Grilli, Masciandaro & Tabellini, 1991; Alesina & Summers, 1993; Cuckierman, 1992; Cuckierman, Webb & Neyapti, 1992).

A careful analysis of these studies, however, indicates various weaknesses. According to Posen (1993) e.g. central bank independence is an endogenous variable, in the sense that countries with a high public aversion to inflation may also have a greater propensity for creating an independent central bank. Another weakness is that most empirical studies only consider central bank independence and its relationship to inflation, without taking into account other factors that may influence economic performance (see Pollard, 1993).

In this paper we attempt to account for other factors, besides central bank independence, that could affect the rate of inflation. Like Grilli, Masciandaro & Tabellini (1991) we include political variables, but instead of merely adding them to the list of explanatory variables we emphasize the interplay of central bank independence and political variables. Other factors that we consider to be relevant relate to the structural characteristics of the economy. We show that governments with discretionary power over monetary policy tend to pursue more inflationary policies in countries characterized by a high natural rate of unemployment and a flat inflation-unemployment trade-off.

2. THEORETICAL FRAMEWORK

2.1. The Barro-Gordon model

We use the Barro-Gordon model as a theoretical framework for analyzing the role of central bank independence, political variables and structural characteristics for the inflation performance of a country (see Barro & Gordon, 1983). The main insight of this model is that, unless government is institutionally committed to price stability, each economy is characterized by a positive equilibrium inflation rate.

The argument runs as follows : assume that the policymakers' utility decreases with the level of inflation and the rate of unemployment and that this is known to the public. Assume further that the policymakers maximize a social welfare function, taking into account the relationship between inflation and unemployment as revealed by an expectations-augmented Phillips-curve.

Barro and Gordon show that under these assumptions a policy of zero inflation is not sustainable because such a policy is incredible in the public's eyes. The reason is that it is, in the terms of Kydland & Prescott (1977), time-inconsistent. As soon as the inflationary expectations of the economic agents have adjusted to price stability, the policymakers have an incentive to renounce this policy and replace it by a policy of positive (surprise) inflation, which yields a rate of unemployment below the natural one. The resulting combination of inflation and unemployment provides a higher utility level than the combination with zero inflation and unemployment equal to the natural rate.

Knowing the policymakers' interest in surprise inflation the rational public will hold positive inflation expectations, forcing the monetary policymakers to inflate or to drive the economy into a recession. The policymakers will prefer the

former option which implies that in the end the economy will be characterized by a positive, preference-related equilibrium inflation (cf. Backus & Driffill, 1985).

This equilibrium inflation rate relates to a situation where (1) the public's expectations are realized and the actual unemployment rate equals the natural rate; and (2) the policy-makers no longer have any interest in creating a surprise inflation.

The argumentation is graphically illustrated in figure 1. The concave indifference curves reflect the relative aversion of the policymakers for inflation and unemployment. The figure further shows some short-term Phillips-curves indexed on expected inflation and a vertical long-term Phillips-curve at the natural rate of unemployment. It is clear that the combination $p=0$ and $u=u_n$ is optimal from a welfare point of view. Nevertheless, a policy directed towards price stability will lack the necessary credibility, if the public knows the true preferences of the policymakers and knows that they dispose of the needed discretion to create a surprise inflation.

FIGURE 1

Starting from the optimal combination (point a), the policy-makers have indeed an incentive to create a surprise inflation (point b). However, since expected inflation will not systematically differ from actual inflation, the economy returns to the natural rate of unemployment (point c). Once more the policymakers have an incentive for surprise inflation (point d). Only in point e is there no longer such a stimulus. Moreover, in this point expected inflation also equals actual inflation.

It is easily shown that equilibrium inflation is higher if government has a high relative aversion to unemployment and if the economy is characterized by a high natural rate of unem-

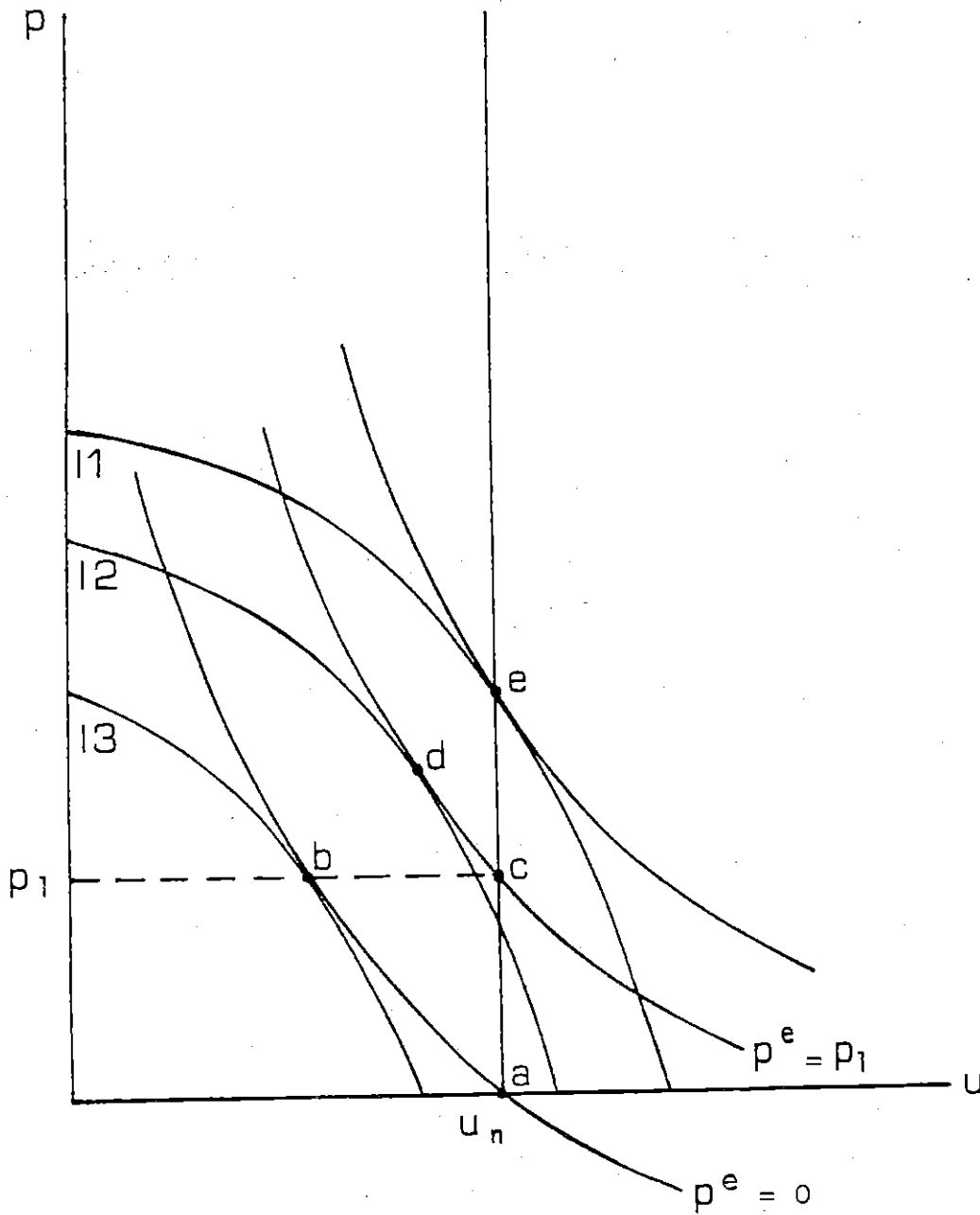


figure 1

ployment and a flat short-term Phillips-curve. To formalize, consider the following simplified model:

$$\begin{aligned} (1) \quad p - p^e &= \gamma(u - u_n) & \gamma < 0 \\ (2) \quad L &= 1/2 p^2 + \theta/2 u^2 \\ (3) \quad p^e &= E(p/I_{-1}) = p + \xi & E(\xi) = 0 \end{aligned}$$

Equation (1) represents the expectations augmented Phillips-curve, with u and u_n being the actual and the natural rate of unemployment, respectively, and p and p^e actual and expected inflation. Equation (2) is a standard quadratic loss-function for the policymakers, with θ standing for their relative aversion to unemployment. Finally, equation (3) expresses the idea of rationally formed inflationary expectations, with ξ representing white noise.

To derive the equilibrium rate of inflation we minimize the loss-function (2), after substituting equation (1) into equation (2). One then obtains :

$$(4) \quad L = 1/2 p^2 + \theta/2 [(p - p^e)/\gamma + u_n]^2$$

Minimization of (4) yields the following first-order condition¹:

$$(5) \quad \partial L/\partial p = p + \theta/\gamma^2 (p - p^e) + \theta u_n/\gamma = 0$$

Finally, considering that, in equilibrium, $p^e = p$ (equation 3) we obtain the following equation for the equilibrium inflation rate:

¹In deriving equation (5) it is assumed that $\partial p^e/\partial p = 0$, i.e. that the policymaker pursues a discretionary policy, choosing the inflation rate after expectations have been formed (cf. Barro & Gordon, p. 595).

$$(6) p = \theta u_n / |\gamma|$$

Equation (6) confirms the role of the three previously mentioned determinants of the preference-related equilibrium inflation rate, viz. θ (the relative aversion to unemployment), u_n (the level of the natural rate of unemployment) and $|\gamma|$ (the slope of the Phillips-curve).

With respect to the empirical translation of this equation, data on u_n and $|\gamma|$ are relatively easily available. Concerning the variable θ we assume that left-wing governments have a higher relative aversion to unemployment than right-wing governments and that a policy strategy of shadowing the German mark reflects the government's preference for price stability (notice that as a rule exchange rate policy is the responsibility of the government and not the central bank).

This hypothesis can be formalized in the following way :

$$(7) \theta = \theta^+ (\text{LEFT}, \text{SGM})$$

with LEFT: an indicator reflecting the relative strength of left-wing parties in government and parliament and SGM: an indicator of the degree of government commitment to shadow the German mark (both indicators are explained in the appendix).

2.2 Central bank independence, political stability and equilibrium inflation

The Barro-Gordon model has a normative interpretation, since it offers a strong argument for rules instead of discretion. In a regime characterized by discretion the model also gives an explanation for the level of (long-term) inflation.

Based on the second interpretation we can now formulate the following hypothesis : in countries where governments have no discretionary power, inflation will be low (say zero), whereas in countries characterized by discretionary government power,

inflation will be given by eq. (6). Assuming that an independent central bank deprives government from any discretionary power to create a surprise inflation we formalize this idea in the following way :

$$(8) \quad p = \frac{\theta u_n}{|\gamma|} (1 - \text{CBI})$$

with CBI = 0 if the central bank is not independent
 CBI = 1 if the central bank is independent

The implication of eq. (8) is that only in countries that do not have an independent central bank, inflation is determined by the politicians' relative aversion to unemployment, the level of the natural rate of unemployment and the slope of the Phillips curve.

Even when governments have discretionary power for surprise inflation (CBI=0), inflation might not be as high as suggested by equation (6). Actual policy making is indeed more similar to a repeated game, whereas the theoretical framework mirrored a one shot game. In a multi-period framework and in politically stable countries (i.e. in countries where today's government has a high probability to be tomorrow's government as well), government parties realize that if they create a surprise inflation, they will lose their reputation. They know that they will then have to face a public with higher inflation expectations. Clearly, this knowledge will reduce the incentive to inflate. In politically unstable countries there will be no such reduction of the incentive to inflate. Since government parties have a high probability not to be in the next government, they will probably not have to face the burden of a rise in the public's inflation expectations (see Sheffrin, 1989, p. 153-155). We therefore rewrite eq. (8) as:

$$(9) p = \frac{i\theta u_n}{|\gamma|} (1 - \text{CBI})$$

with $0 < i^+ (I) < 1$

and I : a measure of government instability

Before presenting our estimation results one final refinement with respect to the CBI variable is needed. In the real world central banks are hardly ever totally independent or dependent from the government. Measures of central bank independence are typically rank orders determined by selecting a set of factors thought to be relevant for independence and then analyzing central bank charters or laws for compliance with these factors. Grilli, Masciandaro and Tabellini (1991) e.g. constructed two indices of central bank independence, one measuring economic independence (with a value actually ranging from one to seven, where this value is increasing in the level of independence) and one measuring political independence (with a value ranging from one to six). To take into account the degree of central bank independence, we rewrite eq. (9) as follows :

$$(10) p = \frac{i\theta u_N}{|\gamma|} \left(1 - \frac{\text{CBI}}{n}\right)$$

With CBI = index of central bank independence, increasing in the level of independence from 0 to n.

3. ESTIMATION RESULTS

Table 1 shows the estimation results for eq. (10), based on the Grilli et al. index of economic and political independence and with the measure of government instability proxied by the number of significant government changes (SIG). To facilitate comparability with existing studies we opted for a linear

approximation, viz.

$$(11) \quad p = a_0 + \left(1 - \frac{CBI}{13}\right) (a_1 + a_2 u_n + a_3 |\gamma| + a_4 LEFT + a_5 SGM + a_6 SIG)$$

With $a_0 \geq 0$

$$a_2, a_4, a_6 > 0$$

$$a_3, a_5 < 0$$

Table 1: Estimation results for equation (11)

$$\hat{p} = a_0 + \left(1 - \frac{CBI}{13}\right) (a_1 + a_2 u_n + a_3 |\gamma| + a_4 LEFT + a_5 SGM + a_6 SIG)$$

	1970-79	1980-89	1970-89
a_0	5.78** (15.00)	3.93** (8.42)	5.00** (11.20)
a_1	9.08** (4.52)	10.10** (4.19)	7.70* (2.95)
a_2	0.56* (2.70)	-0.07 (0.43)	0.23 (1.21)
a_3	-1.23* (2.15)	-3.02** (4.50)	-1.83* (2.65)
a_4	1.40* (2.24)	1.65** (3.15)	1.55* (2.25)
a_5	-6.65** (5.19)	-3.96** (4.82)	-6.23** (5.39)
a_6	0.67 (1.64)	0.91* (2.39)	0.84* (2.65)
R^2	0.94	0.90	0.94
\bar{R}^2	-	-	0.91
SE	0.79	0.84	0.70

t-values between brackets; number of observations: 18
*,** denotes significance at the 5% (1%) level.

We have estimated equation (11) for the 1970s and the 1980s simultaneously (SURE). Further, the same equation has been

estimated for 1970-89 (OLS)². All estimated coefficients are significantly different from zero, except a_6 for the 1970s and a_2 for the 1980s and for the whole period. Except for the latter they also have the expected sign. In general, we therefore consider these estimation results to be favourable to the hypothesis that the role of central bank independence for price stability should not be analyzed independently from the political and structural characteristics of the countries involved.

To reinforce this insight, we went through three additional tests. First, we re-estimated eq. (11) for 1970-89 without accounting for the interrelationship between central bank independence and the other political and structural variables. The results are clearly inferior to the ones presented in table 1:

$$\begin{aligned}
 p = & 12.10^{**} + 0.17 u_n - 0.70 |\gamma| + 0.72 \text{ LEFT} - 2.08^{**} \text{ SGM} \\
 & (5.54) \quad (1.26) \quad (1.54) \quad (1.85) \quad (3.97) \\
 & + 0.30 \text{ SIG} - 0.56^{**} \text{ CBI} \\
 & (1.62) \quad (3.85)
 \end{aligned}$$

$$R^2 = 0.89 ; \bar{R}^2 = 0.83 ; SE = 1.08$$

Second, we compared our results with those of Grilli, et.al. (1991). The result is given in table 2. Contrary to Grilli et al. our results indicate that central bank independence plays a role in the two subperiods, but its effect cannot be computed independently from the other variables. We further find a more important influence of a fixed exchange rate strategy than Grilli et al. and a reduced role for government

² Similar results are obtained if we use the indices of central bank independence computed by Cuckierman (1992) or Alesina & Summers (1993), in which case we have to adapt the specification of eq. (10) slightly, since in our data set the value of CBI ranges from 0.14 tot 0.68 (Cuckierman) or from 1.5 to 4 (Alesina & Summers).

stability. Contrary to Grilli et al. we show that structural characteristics ($u_n, |\gamma|$) and the political colour of the government are also relevant to explain long-term inflation differentials between countries.

As a third illustration of the fact that the role of an independent central bank depends on other structural and political characteristics in the economy, we computed for each country the effect on equilibrium inflation of a unit increase in the index of central bank independence on average inflation ($\partial p / \partial \text{CBI}$). This is shown in table 3. The effect differs between countries and ranges from -0,32 to -1.20 in the 1970s and from +0.22 to -0.95 in the 1980s³. For nearly all countries, except Italy and Norway the effect is smaller in the 1980s. It is clear from the theoretical analysis that the effect on inflation of a unit increase in central bank independence is not constant (as is the case in Grilli e.a. and other studies), but that we find the weakest effect of increasing central bank independence on inflation (*ceteris paribus*) in countries with :

- a low natural rate of unemployment
- a steep short-term Phillips-curve
- a weak position of the left-wing parties in government and parliament
- a high commitment of the government to shadow the German mark
- a stable government.

³ The correlation coefficient between both series is 0.72.

Table 2. Comparison of estimation results

Regressors and statistics		1970-1979		1980-1989		1970-1989	
		Grilli et al.	our results	Grilli et al.	our results	Grilli et al.	our results
FREQ	-	5.94**	-	6.01*	-	0.08	-
SIG	SIG(1-CBI/13)	6.79*	0.67	24.59**	0.91*	7.42	0.84*
MAJ	-	0.02	-	-0.01	-	-0.01	-
CBI	CBI	-0.32	-0.70**	-1.09**	-0.78**	-0.56**	-0.59*
EMS	SGM(1-CBI/13)	-	-6.65**	-1.11	-3.96**	-1.13	-6.23**
-	$u_n(1-CBI/13)$	-	0.56*	-	-0.07	-	0.23
-	$l_n^j(1-CBI/13)$	-	-1.23*	-	-3.02**	-	-1.83*
-	LEFT(1-CBI/13)	-	1.40*	-	1.65**	-	1.55**
R^2		0.80	0.94	0.76	0.90	0.75	0.94
SE		1.53	0.79	2.47	0.84	1.12	0.70

Note : * , ** denotes significance at the 5% (1%) level

Table 3.

Effect of a unit increase in central bank independence on average inflation ($\partial p / \partial \text{CBI}$)

	1970-79	1980-89
Australia	-0.84	-0.79
Austria	-0.32	0.07
Belgium	-0.48	-0.27
Canada	-1.00	-0.70
Denmark	-0.55	-0.39
Finland	-0.85	-0.74
France	-0.75	-0.66
Germany	-0.84	-0.66
Ireland	-1.20	-0.58
Italy	-0.91	-0.95
Japan	-0.32	0.22
Netherlands	-0.47	0.11
Norway	-0.38	-0.68
Spain	-1.14	-0.87
Sweden	-0.54	-0.45
Switzerland	-0.41	-0.11
UK	-1.04	-0.42
US	-0.82	-0.5
Average	-0.71	-0.47
Standard deviation	0.28	0.34

12. CONCLUSIONS

Our theoretical and empirical analysis strengthens the point of view of earlier comments on studies investigating the relation between central bank independence and inflation. Central bank independence should indeed be considered in combination with other political and structural factors that determine the inflation performance of a country. We showed that the gains from increasing central bank independence are expected to be larger in countries with instable governments, not committed to a fixed exchange rate regime, and in countries where left-wing parties hold a strong position in government and parliament. The effect on inflation of central bank independence was also shown to depend on the level of the natural rate of unemployment and the slope of the short-term Phillips-curve.

13. APPENDIX

	p70	p80	Un70	Un80	γ	CBI	SGM 70	SGM 80	LEFT 70	LEFT 80	SIG 70	SIG 80
Australia	10.4	8.3	4.01	6.10	0.50	9.0	0	0	-0.8	0.8	2	1
Austria	6.4	4.1	0.48	2.95	1.45	9.0	1	2	1.8	0.9	1	0
Belgium	7.2	4.5	4.82	7.04	0.53	7.0	1	1	0.3	-0.3	2	0
Canada	7.8	5.7	7.01	8.14	0.47	11.0	0	0	-0.1	-0.5	1	2
Denmark	9.7	6.3	4.64	7.30	0.25	8.0	1	1	0.3	-0.4	3	1
Finland	10.9	7.5	2.61	4.65	0.72	7.0	0	0	1.0	0.7	0	1
France	9.3	7.2	3.88	7.81	0.61	7.0	0	1	-1.0	1.3	1	3
Germany	5.5	3.0	1.87	4.04	0.50	13.0	0	0	1.0	-0.4	0	1
Ireland	13.5	8.6	9.13	13.09	0.41	7.0	0	1	0.4	0.5	2	3
Italy	13.7	11.9	4.94	5.42	0.89	5.0	0	0	0.8	1.0	0	4
Japan	8.1	1.9	1.82	2.14	3.73	6.0	0	0	-1.0	-1.0	0	0
Netherlands	7.7	2.5	4.28	7.27	0.60	10.0	1	2	0.0	-0.8	3	0
Norway	8.3	7.2	2.22	2.50	1.37	7.0	1	0	0.7	0.2	3	3
Spain	14.4	10.1	9.73	14.95	0.31	5.0	0	0	0.0	1.4	1	1
Sweden	9.0	8.1	1.93	2.36	2.15	7.0	0.5	0	0.6	0.9	3	1
Switzerland	5.3	3.9	0.83	1.44	2.27	12.0	0	0	-1.0	-1.0	0	0
UK	12.9	7.5	5.15	7.92	0.24	6.0	0	0	-0.1	-2.0	3	0
US	7.0	5.2	5.97	6.36	0.38	12.0	0	0	-1.4	-1.8	1	1

Data description and sources

p70: average yearly percentage rate of change of the GDP deflator in the 1970s
p80: average yearly percentage rate of change of the GDP deflator in the 1980s
(Source: OECD, Economic Outlook, diskettes, June 1994)

Un70: equilibrium unemployment rate 1969-79

Un80: equilibrium unemployment rate 1980-88

(Source: Layard, Nickell & Jackman, 1991, p. 436)

| γ |: slope of the short-term Phillips curve. This variable is a (normalized) average of nine authors' estimates of the short-run responsiveness of wages to unemployment (Source: Heylen, 1993).

CBI: index of central bank independence (sum of index of political independence and index of economic independence).
(Source: Grilli et al., 1991)¹.

SGM: indicator of government commitment to shadow the German mark. For the 1970s participation in the European Snake arrangement is assumed to reflect this commitment. For the 1980s participation in the European Monetary System is a starting point for evaluation. A difference should however be made between The Netherlands (where the German mark has been shadowed very rigorously during the 1980s: SGM=2), Belgium, Denmark, Ireland and France (which have often devalued their currency with respect to the German Mark, especially in 1979-87, SGM=1) and Italy (where there have been continuous devaluations, even in 1987-90, SGM=0). Further, notice that SGM equals 2 for Austria in the 1980s as well. Though this

¹ Sweden, Norway and Finland, for which Grilli et al. present no data, are assigned the same CBI value as France. Support for this choice can be found in Parkin (1987) and Alesina (1989).

country did not participate in the EMS, it successfully shadowed the German mark.

LEFT: indicator of the political strength of leftist parties. This indicator reflects the representation of leftist parties in government, as well as in parliament. Basically, LEFT is an index running from -2 to +2. Heylen (1994) presents yearly data for 1970-90. Our LEFT70 is the average of these yearly data for 1970-79; LEFT80 is the average for 1980-89. Specifically,

- LEFT=+2: governments composed of left-wing parties with a majority or a "soft" minority in parliament²;
- +1: governments composed of centre-left parties or of centre and left-wing parties; or left-wing governments facing a "hard" minority in parliament;
- 0: governments composed of centre parties and governments composed of both left-wing and right-wing parties;
- 1: governments composed of centre-right parties or of centre and right-wing parties; or right-wing governments facing a "hard" minority in parliament;
- 2: governments composed of right-wing parties with a majority or a "soft" minority in parliament.

SIG: indicator of government instability: number of significant government changes in the 1970s (SIG70), respectively the 1980s (SIG80). (Source: Grilli et al., 1991, except for Sweden, Norway and Finland: authors' calculations).

A change of government is considered significant if³:

- in a representational parliamentary democracy, there is a change in both the prime minister party and the coalition of parties supporting the government;
- in a majoritarian parliamentary democracy, there is a change in the party of the prime minister;
- in a presidential regime, there is a change in the party of the president.

² "Hard" minority situations are those where the opposition parties in parliament are stronger than the government. Under these conditions there is a continuous threat that the opposition brings the government down. It can be expected that these circumstances lead to more moderate policies. "Soft" minority situations are those where the government parties do not have an absolute majority in parliament, but they do have more seats than the opposition. This situation typically occurs when the parties that do not participate in the government are ideologically strongly divided (e.g. when a Social Democrat government controls 48% of the seats in parliament, the "Bourgeois" opposition 45% and the Communists or regional parties 7%). The situation of the government is then much more comfortable since a cooperation of "extremes" is necessary to bring it down.

³ Following Grilli et al. representational parliamentary democracies are Austria, Belgium, Denmark, Italy, Netherlands, Norway, Sweden and Spain. Majoritarian parliamentary democracies are Australia, Canada, Germany, Ireland, UK, Japan and Switzerland. Unlike Grilli et al. we also consider France to be a (majoritarian) parliamentary democracy. In this country the prime minister is the main government member, and he is responsible to the legislature. Presidential regimes are Finland and the US.

14. REFERENCES

- Alesina, A. (1988), "Macroeconomics and politics", in S. Fisher, ed. NBER Macroeconomics Annual, MIT Press, pp. 13-52.
- Alesina, A. (1989), 'Politics and business cycles in industrial democracies', Economic Policy, 8, p. 57-58.
- Alesina, A. and L.H. Summers (1993), 'Central Bank independence and macroeconomic performance: Some comparative evidence', Journal of Money, Credit and Banking, May, pp. 151-162.
- Backus, D. and J. Driffill (1985), 'Inflation and reputation', American Economic Review, June 530-538.
- Barro, R. and D. Gordon (1983), 'A positive theory of monetary policy in a natural rate model', Journal of Political Economy, 4, 589-610.
- Cuckierman, A. (1992), Central Bank Strategy, Credibility and Independence: Theory and Evidence. MIT Press.
- Cuckierman, A. S.B. Webb and B. Neyapti (1992), 'Measuring the independence of central banks and its effect on policy outcomes', The World Bank Economic Review, September, pp. 353-398.
- Grilli, V., Masciandaro, D. and G. Tabellini (1991), 'Political and monetary institutions and public financial policies in the industrial countries', Economic Policy no. 13, pp. 341-392.
- Heylen, F. (1993), 'Labour market structures, labour market policy and the characteristics of wage formation in the OECD', Labour, 7, no. 2, p. 25-51.
- Heylen, F. (1994), 'Social, economic and political institutions and taxes on labour', Working Paper, Faculteit Economische en Toegepaste Economische Wetenschappen, Universiteit Gent, nr. 94/02, september, 38 p.
- Kydland, F. and E. Prescott (1977), 'Rules rather than discretion: the inconsistency of optimal plans', Journal of Political Economy, no. 3, 473-491.
- Layard, R., Nickell, S. and R. Jackman (1991), Unemployment. Macroeconomic performance and the labour market, Oxford University Press, Oxford.
- Parkin, M. (1987), 'Domestic monetary institutions and deficits', in J. Buchanan, C. Rowley & R. Tollison (eds.), Deficits, Basil Blackwell, Oxford.

Pollard, P.S. (1993), 'Central Bank independence and economic performance', Federal Reserve Bank of St. Louis Review, July-August, pp. 21-36.

Posen A.S. (1993), 'Why central bank independence does not cause low inflation', Central Banking, Autumn, pp. 51-63.

Sheffrin, S.M. (1989), The Making of Economic Policy, Basil Blackwell.

LIJST VAN RECENTE SESO-RAPPORTEN

DE GRAEVE D. & W. NONNEMAN, De economische kosten van AIDS en HIV-infectie in België. Een situatieschets voor 1993, mei 1994, 25 blz. (94/302)

DE GRAEVE D. & W. NONNEMAN, Pharmaco-economic studies : pitfalls and problems, June 1994, 21 blz. (94/303)

DE BORGER B. & K. KERSTENS, Produktiviteit en efficiëntie in de Belgische publieke sector : situering en resultaten van recent onderzoek, juni 1994, 40 blz. (94/304)

SCHROYEN F., Informational feasibility, decentralization and public finance mechanisms, July 1994, 35 blz. (94/305)

VAN GOMPEL J., Optimal wage indexation with exchange rate uncertainty in an oligopolistic and unionized economy, July 1994, 22 blz. (94/306)

VANDEBUSSCHE H., Twin cases : Cartels and European antidumping policy, August 1994, 40 blz. (94/307)

VANHOUDT P., Wat denken economen over lange-termijn economische groei ? Een overzicht, augustus 1994, 32 p. (94/308)

KESENNE S., Win maximization and the distribution of playing talent in professional team sports, September 1994, 22 p. (94/309)

KONINGS J., Hoe verschillen opvattingen over wat "fair" is tussen economen en niet-economen ?, september 1994, 27 p. (94/310)

WITLOX F., Discrete choice modelling in a context of spatial choice behaviour : a survey, September 1994, 83 p. (94/311)

SCHROYEN F., Optimal non-linear income taxation when income from elastic labour supply is costly to monitor, October 1994, 39 p. (94/312)

DE GRAEVE D., DIERICKX G. en A. DIRCKX, Ziekteverzuim en het toekennen van arbeidsongeschiktheid, november 1994 (94/313)

VANDEBUSSCHE H., How can Japanese and Central-European exporters to the EU avoid antidumping duties ?, December 1994, 33 p. (94/314)

DE BORGER B., FERRIER G. en K. KERSTENS, The choice of a technical efficiency measure on the free disposal hull reference technology : a comparison using US banking data, January 1995, 34 p. (95/315)

KONINGS J. en H. VANDEBUSSCHE, How does increased foreign competition affect UK employment and wages ? An empirical exploration, February 1995, 19 p. (95/316)