

# **Do We Really Need Central Bank Independence?**

## **A Critical Re-examination**

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## **Do We Really Need Central Bank Independence? A Critical Re-examination**

### **Abstract**

In this survey, we critically review the argument for central bank independence (CBI). We argue CBI is neither necessary nor sufficient for reaching monetary stability. First, CBI is just one potentially useful monetary policy design instrument among several. Second, CBI should not be treated as an exogenous variable, but instead attention should be devoted to the question of why central banks are made independent. CBI is chosen by countries under specific circumstances, which are related to their legal, political, and economic systems. Third, in a number of empirical studies, researchers found CBI is correlated with low inflation rates. By taking the endogeneity of CBI into account, however, there is no reason to believe the correlation between CBI and low inflation tells us anything about causality.

**JEL:** E58, E52

**Keywords:** Central bank independence, monetary policy

## **I. Introduction**

Central bank independence (CBI) has become one of the central concepts in monetary theory and policy. Most economists agree CBI is desirable because it helps to reach the long-term goal of price stability. Although one might think about alternative mechanisms to reach low rates of inflation, CBI is clearly the one most often recommended. The idea has also found confirmation in the fact that more and more countries in the OECD and beyond have made their central banks independent. The culmination of this trend is the newly created European Central Bank (ECB) that, according to its statutes, is the most independent central bank of all.

In this survey we wish to critically review the argument for CBI. Compared to other surveys (most recently, Berger et al. 2000), which confirm conventional wisdom, we take a different view by arguing CBI is neither necessary nor sufficient for reaching monetary stability. Concerning the claim that CBI is not a necessary condition to achieve price stability, we point out CBI is just one monetary policy design instrument among several which can be employed for achieving this objective. Our conclusion is that no one monetary policy design instrument is optimal under all conditions. We argue CBI is not a sufficient condition for price stability, and it should not be treated as an exogenous variable. In particular, we think too little attention is devoted to the question of why central banks are actually made independent. Consequently, it would be wrong to regard CBI as a cause for low inflation rates.

We begin our discussion by reviewing the theoretical foundations of central bank independence. First, we briefly summarize the fundamental models underlying the case for CBI. Then we demonstrate there are serious theoretical problems with the standard argument that CBI is the optimal choice of a monetary policy design instrument.

Although these problems are stated in the literature, the typical conclusion is that CBI seems to work in practice and it should be seen as the best workable way to achieve low rates of inflation (see Berger et al. 2000). We do not find this inference convincing, and it certainly does not follow from any empirical tests of the CBI hypothesis.

Second, we proceed by showing there are alternative monetary policy design instruments available which can be employed to achieve low inflation rates. In particular, we focus on fixed exchange rate and currency board arrangements, inflation targets, and inflation

contracts. It is important to note these approaches have equally or more favorable theoretical properties than CBI and, moreover, have been successfully implemented in practice. At the same time, there is no doubt every one of these approaches also comes with at least one disadvantage, which leads us to the conclusion there is no design instrument available that is optimal under all conditions. Thus, CBI is not a necessary condition for achieving monetary stability.

Third, in a number of empirical studies, researchers found CBI is correlated with low inflation rates. A typical policy conclusion based on this finding is that the creation of an independent central bank will bring about price stability. We argue this conclusion is not warranted for a number of reasons. Our focus is on the issue of endogeneity of CBI. Even assuming we measure the right thing and there is strong evidence for a relationship between CBI and inflation, there is no reason to expect that this finding will be policy robust. In other words, this correlation does not tell us anything about causality. Instead, at least two decisions determine the choice of CBI by a society. There needs to be a decision on whether price stability should become a major economic policy objective. If this decision is being made in the affirmative, then comes the question about the appropriate choice of a monetary policy design instrument. So the “true” cause underlying the empirical relationship between CBI and low inflation rates is the social choice in favor of a stability-oriented monetary system.

Taking these aspects into account, we lay out existing theories and empirical evidence regarding the decision to make price stability an important aim for economic policy. The two main explanations rest on either the idea of an ‘inflation culture’ in societies that opt for a stable monetary regime or, alternatively, that specific interest groups are able to influence the government so that such a monetary policy objective is implemented. Then we proceed to show under which conditions societies will choose specifically CBI as the monetary policy design instrument. Here we consider three determinants of a country: its legal, political and economic systems. Dependent upon the existence of specific circumstances in these societal subsystems, countries will either choose CBI or any of the other available instruments discussed earlier.

In the conclusion, we summarize the main argument and put forward some suggestions for further research.

## II. The theoretical case for CBI

### 1. Theoretical background

The seminal article for the literature on central bank independence is by Barro and Gordon (1983). It builds upon earlier work by Kydland and Prescott (1977), who introduced the idea of time-inconsistent behavior. They start with the idea that the monetary authority is a social welfare maximizer who has complete control over the rate of inflation and whose objectives are defined over employment (or output) and inflation. Deviations of employment and inflation from their target values (here taken to be zero) enter the loss function quadratic. Nominal wage contracts are fixed over a certain time period, which implies that inflation reduces real wages, creating more output and employment. This creates an incentive to surprise wage setters by letting the rate of inflation rise above the expected rate, which determines nominal wage demands.<sup>1</sup> Rational expectations wage setters foresee this incentive and incorporate the expected rate of inflation into their nominal wage demands. Under the assumption that the objective function of the monetary authority is publicly known, the expected rate will reflect the equality between marginal gains and costs from inflation, and the actual rate of inflation will be equal to the expected rate. There is no monetary surprise and no employment gain, but a positive rate of inflation.<sup>2</sup> Promises not to inflate are not credible because the welfare maximizing government has an incentive to renege on this promise once wage contracts have been signed. Ex-ante optimality requires zero inflation, but ex-post positive inflation is welfare maximizing. Hence, as Barro and Gordon pointed out, an inflationary bias exists in this setup.

To avoid positive rates of inflation that carry only costs but no benefits, a mechanism is sought to commit the monetary authority to a non-inflationary monetary policy. The

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<sup>1</sup> Blinder (1998) voices serious doubts concerning the assumption central bankers have an incentive to use monetary policy in such a way.

<sup>2</sup> An unexpectedly low rate of inflation would create unemployment and thus not be pursued in a one-period model. If the central bank aims to build up a reputation for being tough, this might change. If, however, unemployment is persistent, then the incentive to build reputation is severely reduced (see Grüner 1996).

mechanism suggested by Rogoff (1985) is to appoint someone whose preferences are known to diverge from those of the welfare maximizing authority. If someone who puts more relative weight on avoiding inflation than unemployment were to set monetary policy, the rate of inflation would be lower, since marginal costs and benefits from inflation are different for that person. Given that the preferences of this person are known, the expected and actual rate of inflation would fall. This simple and intriguing solution of appointing a “conservative” central banker, as Rogoff called these preferences, could help to reduce the inflation bias.

However, as he also pointed out, this solution is not costless in a world with stochastic shocks, because in such a world there is a stabilizing role for monetary policy. With a conservative central banker, however, stabilization policy would be relatively weak. Hence, lower average inflation comes at the potential price of higher output variability. Another aspect pointed out by Rogoff (1985) is that conservatism is only a second-best solution to the inflation bias problem. The first-best would be to eliminate existing rigidities in the labor and product markets. Rigidities in labor and product markets must be present to generate an inflation bias, since if all factors of production are employed there is no incentive to increase production and employment.<sup>3</sup>

## **2. Independence, conservatism, and political influence**

The Rogoff solution has become the major justification for CBI. Implicitly in this argument is the equalization of independence and conservatism. Rogoff (1985, 1177) wrote: “Society can make itself better off by selecting an agent to head the independent central bank who is known to place greater weight on inflation stabilization (relative to unemployment stabilization) than is embodied in the social loss function.” CBI does not imply conservatism, however, and the two concepts should be carefully separated.

There are a number of serious problems with setting these two concepts equal which undermine the case for CBI. For instance, the negative empirical relationship between

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<sup>3</sup> As Posen (1998) points out there might be circularity between rigidities and conservatism of the central bank. If a central bank is very conservative it might cause nominal wage rigidities to increase, making disinflation much more costly than otherwise. See Gros and Hefeker (2000) for an example with endogenous degrees of rigidities.

CBI and inflation typically breaks down in a sample consisting of third-world countries (see Cukierman 1992). In the case of transition economies, Hillman (1999) has argued that the higher the degree of CBI is, the higher the rate of inflation becomes, thus turning the evidence that appears to hold for OECD countries on its head. A striking example is the central bank of Belarus, which possessed a high degree of independence.

Nevertheless, the president of the central bank was jailed and replaced by the finance minister as his policy fell in disgrace with the government. Hillman draws the conclusion that what is necessary is how CBI is actually applied, which he sees as a question of political culture.

It is also possible to find cases that might question the equality of CBI and low rates of inflation even among OECD countries. An interesting example is Japan, where inflation rates are low and the central bank is strongly influenced by the Ministry of Finance.

Regarding the U.S., it is arguably the case that the Fed exhibits a higher degree of factual than legal independence. Finally, German economic history provides another example where the Reichsbank was deemed independent but nevertheless accommodated the policy of the government (Vaubel 1997a).

Moreover, simply granting independence, different to what is often suggested in the literature, will not necessarily yield immediate and prompt credibility.<sup>4</sup> Countries that have a track record of several years (or decades) of very expansive and loose monetary policy will not be able to convince the public of a change in its monetary strategy by simply changing the legal status of the central bank. Therefore, a change in the exchange rate regime, or the introduction of an existing currency, might be more credible and effective in changing the public's expectation of future monetary policy. This conclusion is supported by evidence gathered by Blinder (1999) who surveyed central bankers around the world, concluding that monetary history is probably the most important ingredient of a credible monetary policy.

One further argument for having legally independent central banks is to avoid political business cycles, generated by governments trying to improve their reelection chances. It might be argued the simplest solution of this problem is to delegate monetary policy

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<sup>4</sup> Forder (2001) puts forward a number of critical points regarding the usefulness of the concepts credibility and reputation in the discussion of monetary policy.

away from the government. If governments are not able to set monetary policy, neither are they able to pursue political business cycles using this instrument. In fact, it seems there is no monetary policy-induced political business cycle in OECD countries (see Drazen 2000b).

Vaubel (1997a) points out delegating monetary policy may not work as a solution to the political business cycle anyway. He argues independent CB councils could be politically 'captured' by the government to perform a monetary policy that corresponds closely to its interests. Governments will make political decisions when appointing central bankers, which will then support the respective party's economic policy. He shows the German Bundesbank has in several cases engineered an active monetary policy to help the ruling party and in other cases set a tighter monetary policy than necessary to deteriorate the chances of the government of reelection. Thus although CBs are formally independent, they could be politically influenced via the appointment procedure. Again, legal CBI may turn out to be a rather poor instrument to measure monetary policy independence, and actual independence depends on the behavior of governments in the appointment procedure and the behavior of independent central bankers after they have been appointed.

Berger and Woitek (1997) use time series modeling to investigate the validity of Vaubel's claim in the context of political business cycles. If CB councils were captured then they would support economic growth by loosening monetary policy. They neither find evidence for such a behavior in the time series data nor in an analysis of the Bundesbank minutes (see also Vaubel's reply 1997b). At least one criticism of the Berger and Woitek study is that it presupposes that output or employment is always valued higher than low inflation by the population. Empirically, a number of survey results indicate that, in certain periods, inflation is seen as more important than unemployment (see Fischer and Huizinga 1982, Rose 1998, Hayo 1999b).

Whatever the evidence in this particular case, the general point is worth to be taken into account. Since most central bank boards have terms of office going beyond the government's, nothing rules out that an independent central bank has and pursues a political agenda on its own that may or may not coincide with that of any particular party



in power. It may try to help the government with an active monetary policy, or it might just do the opposite.

A further point is almost all of the models assume the degree of conservativeness could be observed, something that is not the fact in more realistic set-ups. If indeed it is assumed maximizing social welfare is the policy problem then it might easily happen that a central banker is appointed who does not at all find the optimal trade-off between inflation and unemployment for society. Appointing someone who is “too” conservative would produce excessive output and employment losses at a rate of inflation that might be sub-optimally low.

This alludes to the complex of central bank accountability, an issue that has received some attention (see Briault et al. 1996, Muscatelli 1998), especially in the context of the role of the ECB and EMU, often referred to as the “democratic deficit” of the ECB (Kenen 1995). If it is not possible to observe a central banker's characteristics, than society (or its representative government) should have the means to overrule or correct actions taken by the central bank. However, this would not be possible with a truly independent central bank. It could also be viewed as a very undemocratic solution and raises the question of whether a society would like to put itself into the hands of bureaucrats who may or may not have the “right” preferences.<sup>5</sup>

Finally, it might also be the case that independence of the central bank and conservativeness of the central bank's preferences are not complements, as the discussion along the lines of Rogoff suggests, but substitutes. Eijffinger and Hoeberichts (1998) show that if the actual monetary policy stance is negotiated between the government and the central bank (something one might reasonably assume if the central bank is not fully independent), any desired outcome can be achieved by making the central bank more conservative, and thus lowering the rate of inflation that the central bank prefers or by giving it more decision power at a lower degree of conservativeness. In both cases the same iso-inflation line can be obtained. This would again caution against setting independence and conservativeness equal.

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<sup>5</sup> Moreover, it is possible that the preferences of society change (see Lippi 2000 and Lindner 1999).

### 3. Credibility and removal of independence

Another argument that sheds doubt on the general applicability of independence is the question of how credible independence really is. As McCallum (1995) has argued, just granting central bank independence does not solve the credibility problem but only shifts it to another level. Even if the objective function of the central bank had the “right” weights, what ensures that the government does not take away independence if it deems it necessary? As long as governments can more or less easily revoke the status of independence not much is gained in terms of credibility of monetary policy.

Again the theoretical argument may be stronger than its practical implications. In most cases, independence is granted via some central bank law that could, maybe with simple or qualified majority, be revoked and changed. Given that such a process would probably take some time, the likelihood of generating a “monetary surprise” is quite small.

Nevertheless, such considerations have prompted some observers to demand constitutional status for CBI. Using Germany as an example, Berger (1997) describes how the German chancellor Adenauer threatened to change the central bank law in 1956 when the Bundesbank would not yield to his monetary preferences. In the end he refrained from putting his threat into reality for fear of a public outburst of opinion against him.

Hence, at least part of the credibility of CBI is related to the strength of the government’s incentive to revoke independence. The trade-off between removing the inflation bias by delegating monetary policy to a conservative central banker and the corresponding loss in discretion to perform stabilization policy is at the center of this literature.

In an early contribution, Lohmann (1992) argues governments may want to be able to override independent CBs in case of particularly large negative shocks to the economy. This restricts the independence of the conservative CB to situations where shocks are relatively small. At the same time, the incentive of the government depends on the costs it incurs when overriding the independent CB. However, in equilibrium, the government will never actually override, as the CB will react according to the interests of the government in situations of large output shocks. In this framework, although CBs are independent, they nevertheless take the governments preferences into account. The empirical implication of this model is that although two CBs are similar in terms of their

statutes they may differ dramatically in practice depending on the costs governments incur when overriding CBs. Lohmann assumes the costs to override CB decisions depend on political institutions in society, or, alternatively, the policymaker is a heterogeneous institution which has to overcome a number of procedural rules to change CB decisions.<sup>6</sup> Thus CBI as measured by legal indices has to be adjusted for the costs of policymakers to override decisions and is therefore endogenous relative to the political and social framework.

Cukierman (1994) puts forward a related argument. He points out there could be economic and political variables influencing the degree of legal independence granted to central banks. The incumbent party faces a trade-off between flexibility of monetary policy, necessary to use according to its interests, and credibility, which results in a lower inflation premium on its debt. CBI should be higher when there is greater political uncertainty, larger government debt, and a stronger preference for low unemployment. Jensen (1997) analyzes a deterministic intertemporal game theoretic framework with exogenous costs of replacing the (conservative) central banker that enter the loss function of the government. He finds “the more important such costs are, the better are economic outcomes in absence of pre-commitment in comparison with the case without delegation.” (918-919). At the same time, monetary policy delegation cannot remove the dynamic inconsistency as long as those costs are not infinite, the reason being the government will always have a remaining incentive to implement surprise inflation after the private sector has fixed labor market contracts. Moreover, since the desirable goal for society should be to obtain the optimal solution to the dynamic monetary policy game, he shows reappointment costs in the case of delegation can make it more difficult to reach such a solution.

On the empirical side, De Haan and van’ t Hag (1995) test, among other things, two hypothesis relating to a possible inflationary bias coming from the choice of flexibility of monetary policy versus credibility for the incumbent government. They look at the relation between CBI as a dependent variable and proxies for the inflationary bias as

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<sup>6</sup> Giordani and Spagnolo (2001) analyze theoretically how political institutions can affect how easy CB laws can be changed. They argue some institutions generate sufficient inertia to undermine the force of McCallum’s argument.

regressors. Further, they try to find out whether governments that are planning to incur higher debt are attempting to increase their credibility to reduce the interest rate premium resulting from the Fisher-effect. Using data for 19 countries, they do not find evidence for either of the two hypotheses. Cukierman and Webb (1995) reach a similar conclusion. Thus it is unclear how much weight these theoretical considerations have for practical central banking.

To summarize, there are a large number of theoretical problems connected with the CBI argument, and at least some of those seem to have practical relevance.

### **III. CBI is not a necessary condition for price stability**

#### **1. Fixed exchange rates, currency boards, and monetary union**

One may doubt the necessity of central bank independence if one compares this to alternative instruments that may help to bring about low and stable rates of inflation. One of these alternative instruments, receiving a lot of attention in many transition, emerging and developing countries, is the choice of a fixed exchange rate as a monetary policy strategy.<sup>7</sup>

By delegating monetary policy to a proven inflation fighter, such as the US Federal Reserve Bank or the German Bundesbank, countries import the credibility of this particular central bank. This is basically the same as appointing a conservative central banker in the way Rogoff has suggested. It is also the opposite of having an independent central bank. An independent monetary policy is not compatible with a fixed exchange rate at full capital mobility (capital flow restrictions would not help much in the longer

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<sup>7</sup> Of course the use of this instrument is not restricted to the mentioned class of countries. The EMS peg of many countries to the deutsche mark has been interpreted as an attempt to import the Bundesbank's monetary credibility (Giavazzi and Pagano 1988, Giavazzi and Giovannini 1989), and the EMU can be seen in the same light too. Grüner and Hefeker (1995) discuss critically the merit of this argument.

time). Even more importantly, governments, having the exchange rate authority, usually make this decision, with or without approval of the central bank.<sup>8</sup>

It has to be acknowledged such a monetary strategy is also subject to the arguments made above about a sudden change in the monetary regime undermining credibility. There are many examples, in Europe and elsewhere, where countries have given up their fixed exchange rates overnight, either willingly or because they were forced to do so by speculators. It has been even suggested that “simple” pegs are not operative any longer, simply because they could be brought down too easily in a world of almost unrestricted capital mobility (Eichengreen 1994). Credible exchange based monetary policy must then come in the form of a full monetary union or as a currency board. The recent trend towards currency boards and full dollarization (or eurozation) demonstrates such an arrangement is preferred to an independent central bank by many governments. One reason might be the successful lobbying of interest groups, which hope to benefit from a fixed exchange rate (Hefeker 1997).

## **2. Inflation contracts and targets**

While the idea of fixing the exchange rate is quite old, there are new concepts in the academic discussion of monetary policy, which can be seen as viable alternatives to CBI. One fundamental problem with the Rogoff solution is a consequence of appointing a conservative central banker may be higher variability of output and employment, as he would stabilize shocks less than a “liberal” central banker. Hence, in this framework, monetary credibility comes at a cost.

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<sup>8</sup> As far as we know, there is not a single central bank in the world that has the exchange rate authority. It is always the prerogative of the government to make such international arrangements. This has been criticized in the run-up to the EMU (Neumann 1991), but it was usually neglected that even the role model of independence, the Bundesbank, does not possess this authority. For example, the German monetary unification exchange rate of 1:1 was implemented against the opinion of the Bundesbank, leading to the resignation of the Bundesbank's president Pöhl. Kenen (1995), and Eichengreen and Wyplosz (1993) have made much of the so-called Emminger letter, in which, according to Emminger (1986), the Bundesbank obtained a guarantee from the Adenauer government that no exchange rate arrangement would ever be made that jeopardized internal monetary stability. That this was a legally binding “contract” is questionable.

This need not be the case, as Walsh (1995) and Persson and Tabellini (1993) have argued. Instead of appointing someone with different preferences than society, one could influence the incentives of the monetary policy maker. The inflation bias could be corrected by imposing a contract on the central banker that would force him to pay a pecuniary penalty if monetary policy is employed to combat unemployment over and above its use for stabilization. Then, monetary policy could still fully account for economic shocks but the systematic inflation component would disappear.

Of course, in reality it would be rather difficult to write such a central bank contract, as Obstfeld and Rogoff (1996) have pointed out. It would require full information about the preferences of the central banker to be able to correct for his marginal incentives to create surprise inflation. It would also be difficult to define those shocks, which are within the scope of stabilization policy. Hence such a contract might lead to conflicts about what degree of monetary expansion is still in accordance with the central bank's area of competence.

A more practical solution is assigning an inflation target to the central bank. This solution, adopted by countries such as the UK, New Zealand, Sweden, Switzerland, Australia, Israel, and Canada, often found in connection with a nominally independent central bank, can be understood as the opposite of independence.<sup>9</sup> Here the government either assigns a target for the inflation rate, say 2 percent, over the short to medium run to the central bank, or the government and the central bank "negotiate" such a target. If the central bank fails to meet this target it not only has to justify its failure, but in some cases it is then foreseen that the central bank president loses his job as a penalty (in New Zealand). In this way, one hopes to achieve a low and stable rate of inflation by holding the central bank, like in the contract solution, responsible for too high a rate of inflation. However, the New Zealand example also indicates there is a large degree of discretion involved in the interpretation of a violation of such a contract. The governor of the Central Bank of New Zealand was not sacked in spite of having missed the target. Abstracting from the actual solutions adopted in some countries, the important point is that the monetary credibility problem and the inflation bias can be overcome without

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<sup>9</sup> For a thorough discussion of countries' experiences, see Bernanke et al. (1999).

resorting to CBI. Further, at least theoretically, it might be possible to achieve a better trade-off between credibility and the ability to stabilize exogenous shocks (Svensson 1997) by adopting an inflation target. Thus, in principle, the inflation bias problem can be solved without compromising the central bank's ability to stabilize.

An additional point is the empirical importance of time inconsistency as a source of an inflation bias has never been empirically scrutinized, and one may have doubts that it is indeed a major concern (McCallum 1995). Recent theoretical work within the context of dynamic general equilibrium macroeconomic models indicates that time inconsistency effects play only a limited role within a wide range of parameter values (Albanesi et al. 2001). However, within our framework, it does not really matter what the specific reasons for inflationary tendencies are, and we do not enter into a detailed discussion of this issue.

So far, we have argued the creation of CBI is not a necessary condition for price stability. In the next section we attempt to show CBI is neither a sufficient condition for price stability.

#### **IV. CBI is not a sufficient condition for price stability**

##### **1. Central Bank Independence is an endogenous variable**

A number of studies find CBI and low inflation rates are correlated (early studies are Alesina 1988, Cukierman 1992, Grilli et al 1991). In conjunction with the theoretical CBI literature, the conclusion drawn from these results is that CBI causes low inflation rates. We do not think this inference is valid. Regarding the measurement of CBI, we agree with Forder (1996, 1998) who raises a number of methodological concerns (see also Mangano 1998). He points out legal and factual CBI may differ and thus measuring legal CBI and finding a correlation with inflation rates may not tell us a lot about the influence of factual CBI.

There are also studies indicating the relationship is not totally robust with regard to control variables and the choice of countries (Cukierman 1992, Posen 1995, Campillo and Miron 1997). We do not believe, however, the question of causality can be solved by

these studies, as running a single-equation regression imposes the causality relationship from the outset. In our view, there exists a two-stage problem in understanding the existence of CBI. In the first stage, societies have to decide on their policy priorities. One of the questions is whether price stability should be regarded as an important policy objective. In the literature, basically two explanations have been given. The first one emphasizes that societies differ with regard to their inflation aversion; they have different “inflation cultures”. Consequently, the nature of the inflation culture will, directly or indirectly, determine the choice of the monetary policy objective. The second approach focuses on the political decision process and looks at the interests of economic actors and their ability to influence monetary policy objectives. Here the financial sector is attributed with having a specific interest in avoiding high inflation rates.

If a society has decided to pursue price stability, then, in the second stage, a decision has to be made about the monetary policy arrangements that can help to bring about such an outcome. One of the alternatives is CBI, but we discussed other approaches in Section I that also qualify as potential candidates. Under what conditions are societies going to choose CBI? The literature points at the characteristics of the respective legal, political, and economic systems of countries. In the rest of this section, we analyze the conditions for the choices made in this two-stage framework in more detail.

## **2. National Inflation Cultures**

The first approach to answer the question of why countries differ in their inflation record is related to the idea that societies differ with respect to the importance of pursuing a monetary policy directed towards low inflation.<sup>10</sup> A simple view, called “preference-instrument view” in Hayo (1998), argues societies, for whatever reason, have differing preferences for inflation rates and this is reflected in the setup of monetary institutions and in the conduct of monetary policy. Here causality runs from society’s preferences to the establishment of specific monetary institutions, such as central bank laws granting independence. The degree of CBI is not responsible for varying inflation records of

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<sup>10</sup> Attempts to track and measure the existence of inflation culture, as well as to provide a definition, are made in Bofinger et al. (1998).



countries but instead the existing *inflation culture*, which again determines, for instance, whether independent CBs will be set up.<sup>11</sup>

This view is somewhat naïve, though, in the sense it presumes preferences for inflation are fixed over time. But it is not obvious why this should be the case. More realistically, we would expect the actual performance of the CB influences people's attitudes towards price stability. If an independent CB does not bring about price stability, people's trust in this organization will be undermined and its ability to perform a tough monetary stance against conflicting interests may be severely damaged. On the other hand, if people believe the CB handles monetary policy competently, they will support it in a power struggle against, for instance, the government (see Berger and de Haan 1999 for a case study of the Bundesbank and the German government). One might call this the "historical-feedback interpretation".

A major problem with this approach is the path dependence of such an explanation makes it very difficult to test it. Using Eurobarometer survey data on European Union countries, Hayo (1998) shows the correlation of a proxy for a country's inflation aversion is at least as high as that of CBI and inflation.<sup>12</sup> Moreover, both CBI and inflation aversion proxy are positively correlated. This finding supports the idea inflation preferences matter, although it does not help very much in discriminating between a preference-instrument and historical-feedback view.

Hayo's study takes on a macro-level approach and it cannot tell us much about who within a society may be particularly interested in obtaining price stability. Van Lelyveld (1999a) focuses on a cross-section of countries at one particular point in time (see also Prast 1996). He uses Eurobarometer 5 from 1976 to analyze two hypotheses put forward in the literature: First, higher income leads to more inflation aversion relative to unemployment. Second, having a more left-wing political opinion implies less concern for inflation. In his results he finds very small support for the importance of income,

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<sup>11</sup> It might as well be then a question of political culture whether CBI is taken seriously and respected, see Hillman (1999).

<sup>12</sup> In an earlier study by Collins and Giavazzi (1993), attitudes towards inflation and unemployment are empirically estimated using consumer expectations derived from surveys based on a loss function.

while there is more evidence a higher preference for income inequality will lead to less inflation aversion. An update of this analysis using a survey from 1997 (Eurobarometer 48) shows these general results appear to hold, although individual models turn out to be rather unstable (van Lelyveld 1999b).

A somewhat different approach to explain the relative inflation aversion of societies is used by de Jong (2000). Here the idea is that nations differ in cultural attributes. Certain cultural characteristics, such as the extent to which an unequal distribution of power is accepted and the degree of uncertainty avoidance, help to explain why some countries experience low inflation and others do not. The theoretical argument is supported by country-level empirical data based on cultural constructs derived by Hofstede (1980). It appears some effects of cultural values on inflation take on a more direct route, without affecting CBI. Within our framework, we would argue this indicates the choice of alternative design instruments to achieve low inflation rates by some countries.

### **3. Political interest groups**

One of the first contributions to take the idea of CBI endogeneity seriously is by Adam Posen (1993). In his view, economic policy reflects the struggle of interest groups attempting to influence policy in a way they consider favorable. It is inappropriate to concentrate only on questions of design of organizations, such as central banks, and to ignore the self-interest of political interest groups. In particular, he argues monetary policy is affected by the lobbying effort of the financial sector, which is assumed to be highly inflation averse.

Although Posen (1993) does not mention it, there are several reasons why commercial banks might fear inflation and thus prefer a conservative monetary policy. As banks usually borrow short and lend long, they are particularly vulnerable to changes in the spread of interest rates. Inflation is sooner or later leading to attempts of disinflation or even deflation. These are usually times where banks come under severe pressures, as the higher real interest rates that this brings about confronts them with serious problems to recover the credits they have given out. Hence, banks might be fearful of inflation and disinflation in its wake.

Under these circumstances, introducing CBI may make it easier for the financial sector interest groups to lobby for support at the CB itself, without going through the usual checks and balances of the political system. Further, since there are flows of staff members between the CB and private banks, it is relatively easy for the financial sector to make its interests heard by the monetary authorities and vice versa. At the same time, the financial sector supports CBI, as it makes it easier to influence monetary policymaking. In view of this complementarity of interests, both financial sector and central bankers form a coalition supporting each others demands, with the result that inflation will be kept low.

In this framework, it is not really CBI that causes monetary policy to strive for low inflation rates. Rather, central bankers simply reflect the interest of a specific group, namely the private financial sector, which is ultimately the source of low inflation. The stronger is the financial sector in its ability to lobby for low inflation, the more weight will be given to price stability by the monetary authority.

There are a number of problems related to Posen's approach. First, it is not obvious that low inflation rates are always in the interest of the financial sector. For instance, the increase in nominal interest rates as a result of higher inflation may mask a larger spread applied by banks. Second, the empirical evidence that the financial sector is inherently inflation averse is not compelling. Although Posen (1995) presents supportive evidence, other studies find less or no support (De Haan and van't Hag 1995, Campillo and Miron 1997, Temple 1998). This need not be seen as a deadly a blow to Posen's theory, though, as the construction of the index for financial opposition to inflation involves a number of strong assumptions, and thus may not bear much resemblance to the theoretical concept. Moreover, in a recent paper Maier et al. (2000) show the Bundesbank's monetary policy was influenced by financial sector pressure. Though they do not make this argument, it can be interpreted as supporting Posen's theory.

Finally, if it truly were the influence of the financial sector that determines CBI, then we should observe fluctuations in inflation rates over time to correspond with financial sector lobbying power. Casual evidence does not suggest a close correspondence, but this is an issue deserving more attention.

Now, taking for given that some countries may care a lot about inflation, what makes them choose CBI and not one of the other alternatives? The following two sections present the relevant contributions in the literature.

#### **4. Legal system, political system, and factual CBI**

We start off our discussion by returning to McCallum's (1995) point delegation cannot solve a possible dynamic inconsistency problem, all it does is to relocate it to a different level. The crucial issue then is the question of why delegation should be more credible than leaving monetary policy in the hands of the government anyway? As argued above, credibility might be improved if changing delegation decisions is costly. Hence it may be useful to look at legislation, jurisdiction and the political system in more detail. Indeed, there is theoretical and empirical evidence that certain aspects of institutional characteristics correlate with inflation rates.

Moser (1999) puts forward a model that contains two conditions for delegation to be credible. First, there must be two decision-making bodies which share the legislation and have veto powers over one another. Second, these two legislative bodies differ with regard to their inflation-output preferences. The hypothesis he derives from this set-up is that those countries characterized by these conditions will have more independent central banks. In the empirical analysis, he distinguishes between three groups of countries: those with strong checks and balances in their legislation, those with weak checks and balances, and those with no checks and balances. He finds countries with strong checks and balances have more independent CBs compared to those with weak or no checks and balances. The countries in the last group have the most dependent CBs. In a second step, he regresses group dummies for checks and balances plus these dummies interacted with CBI on average inflation rates. The outcome of this regression is less straightforward. In particular, the shift term of the country group with no checks and balances is smaller than that of the other groups. This implies that countries with dependent CBs do not necessarily have higher inflation rates. In our framework, this can be interpreted as evidence some countries have found other means to achieve low inflation rates. It is worth pointing out that the proxy used by Moser to measure the legislative framework is

limited in scope, and he might miss distinctive features of the legal framework of some countries.

A related study makes the point that certain characteristics of political systems may help us to understand why countries have implemented CBI and other countries did not is (Farvaque 2000). Countries which have a bicameral system may not have much need to delegate monetary policy and thus feature less independent CBs. This result somewhat contradicts Moser's finding, as Farvaque uses a very similar proxy variable. More federal countries also exhibit a higher degree of CBI. An indicator for the proximity of politicians to voters (constituencies to km<sup>2</sup> of country) shows the further away politicians are the higher CBI is. Finally, a non-robust effect is that the longer governments stay in power (average duration to longest duration in percent) the higher CBI is.

An empirical paper by Bagheri and Habibi (1998) analyzes the relationship between CBI and political liberty and instability. They find both political liberty and stability are positively linked to CBI, which means countries that allow more political freedom and are characterized by less regime and political party instability show higher degrees of CBI. It is conjectured that CBI changes while countries move from non-democratic to highly democratic political systems. Within our framework, this implies CBI becomes directly dependent upon the nature of the political system in a country, and the law of motion with respect to political change and CBI is also clearly defined.

However, the empirical analysis shows a number of weaknesses. For instance, there are almost no control variables in the models, while, at the same time, the authors introduce a country group dummy for Austria, Germany and Switzerland claiming the '... index of legal central bank for these three countries was much higher than others and introduction of this dummy variable significantly increased the quality of regressions' (p. 197). This sounds very much like data mining and does not enhance trust in the stability of the results.

There is a similar problem with Moser's results, as he finds no supporting evidence using the CBI indicator by Eijffinger and van Keulen (1995). He states this is not surprising as this index includes changes in CB law in preparation of entering EMU. His defense is '...independent of their political system, member countries of the European Union are forced by the Treaty of the European Community to install independent central banks' (p.

1584, FN 12). This is not a convincing argument because member countries have entered into EMU by their free will, so if there were no political commitment (as in the case of the UK and Denmark), then they would not have joined. Survey data reveals in each member country, except UK, Denmark and Germany, that there was a majority of people in favor of entering EMU (Hayo 1999a). This can be interpreted as another indicator that checks and balances are only part of the story. In particular, if there exists a consensus in society on this issue, it is unlikely the two legislative bodies will differ to an extent that has a notable effect on the set-up of the CB. In other words, if there is agreement to delegate monetary policy to an institution with a higher degree of independence than any national central bank, this can be seen as a sign of political consensus rather than disagreement, and Moser's argument becomes void.

Finally, Voigt (2000) argues there is an interaction between the independence of the jurisdiction and that of the CB. A culture of rule of law may very much strengthen the position of an independent CB. If there were an undermining of CB de jure independence by the government, people would oppose such behavior, thereby supporting CBI. Thus, a culture of rule of law may be a substitute for a stability-oriented inflation culture.

However, a prerequisite for this argument to work is that CBI already exists, and this again raises the question of why it came about in the first place.

To summarize, the literature has started to isolate specific characteristics of the legal and political system that help to explain the introduction of CBI but there remain a number of unsolved issues. The next section looks at one specific characteristic of the economic system, the organization of the labor market, which may help to explain the creation of CBI in certain countries.

## **5. Labor market institutions**

The Rogoff analysis is based on the US experience with many weak labor unions. Hence, labor is considered as being atomistic, and there is no strategic interaction between labor and central banks. If labor instead is not atomistic, as is the case in many European countries, one should expect that labor unions internalize to a certain degree the negative

effects of high wages on employment and inflation.<sup>13</sup> Calmfors and Driffill (1988) have argued highly organized labor unions will show as much restraint in their wage demands as highly decentralized, and thus competitive, labor unions.

Using the same idea, labor unions should discipline their wage demands if they too have an interest in low rates of inflation. If this is the case, a large union will show wage discipline to an extent that reflects their interest in avoiding high inflation. Guzzo and Velasco (1999) have pointed out that an ultraliberal central banker will bring low rates of inflation because labor unions themselves will discipline their wage demands, thus ensuring high employment and making an over-expansive monetary policy no longer necessary. This line of reasoning turns the conservativeness argument on its head. Of course, this theory has to be qualified if labor unions are not monopolistic, as Cukierman and Lippi (1999) have shown. Lippi (1998a,b) has further qualified the case for the liberal central bank by showing in the intermediate case of several large labor unions, the effect of inflation on the relative real wage set by a trade union could produce a so-called competition effect. Given the other unions' nominal wage demands, a particular union will demand higher nominal wages, which will lead to a lower level of labor demand in the economy from the perspective of the individual union. The moderating effect of this mechanism will be larger the more conservative the central bank is because in this case a nominal wage translates into a higher real wage, thus disciplining any single labor union.<sup>14</sup>

Moreover, Berger et al. (2001) have asked why labor unions should be inflation averse. While it makes sense to assume labor unions - like the rest of society - care about inflation (Cubitt 1992; al-Nowaihi and Levine 1994) this is nevertheless an ad-hoc assumption. They provide a micro-foundation for this inflation aversion of monopolistic labor unions by distinguishing between outside options for the labor union

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<sup>13</sup> If there are many labor unions, or if the central bank is able to commit to its monetary policy, the underlying game structure is changed. If instead of the Stackelberg approach a Nash approach is chosen, labor unions would not discipline their wage demands and, therefore, a conservative central bank would be more adequate (see Jerger 2001).

<sup>14</sup> See also Soskice and Iversen (2000) and Coricelli, Cukierman and Dalmazzo (2000). Lawler (2000), in addition, shows in a stochastic environment central banks should not be ultra-liberal because they would produce high inflation variance.

(unemployment benefits) defined in nominal versus real terms. Only if the outside option of the union is in nominal terms can the case for a liberal central banker be made. In this case, a wage induced price increase will leave non-employed labor union members worse off (as their real unemployment benefits are reduced) which moderates the union's wage demands.<sup>15</sup> In the case of a real outside option, however, the union's wage setting behavior and monetary policy are no longer connected. Therefore, a government valuing employment and stable prices is better off fixing the level of unemployment benefits and social transfers in real terms and appointing a conservative central banker.

Hence, when taking strategic behavior of labor market participants into account the case for the conservative central bank could be once again undermined. Reflecting the sensitivity of these theoretical results to changes in the assumptions, the decision to implement CBI should be made conditional on the actual labor market arrangements in a country.

## **V. Conclusion**

In this paper, we have argued that the conventional view CBI is a necessary and/or sufficient instrument for achieving low inflation rates is not convincing. We present an alternative way of thinking about CBI that is both theoretically and empirically more plausible. The idea is that societies have to make two decisions about monetary policy. First, they decide on the importance being attached to fighting inflation as an important objective. Then the second decision has to be made on what is the best institutional arrangement to achieve the objective of price stability, given the existing political, legal, and economic framework. The first decision indicates CBI is not a sufficient condition for price stability as it is not the ultimate cause but just an instrument among many to achieve this objective. The second decision makes clear CBI is not a necessary condition for price stability in general, although it may be the right solution for some countries.

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<sup>15</sup> Berger et al. (2001) assume a monopoly labor union, thus not discussing the case of multiple large unions. If, however, the case for the conservative central banker can be resurrected for a monopoly union than the argument must be even stronger with multiple unions.



Using this two-step procedure, we can easily encompass a wide variety of findings on monetary policy and CBI in the literature, while this is not possible within the conventional framework.

In the first part of the paper, we use theoretical arguments to ask how strong and convincing the case for central bank independence really is. We argue other solutions to the time-consistency problem exist, such as inflation targets, fixed exchange rates, and inflation contracts, and some may be even preferable to independence and conservativeness because they involve lower costs, while at the same time achieving low rates of inflation. It is usually impossible to write complete inflation contracts, but inflation targets or exchange rate-based monetary policies are practical and frequently chosen alternatives to CBI. These alternatives are often combined with “independence” of the central bank, but as we have argued, this cannot really be understood as proper independence. Hence, CBI is a relevant concept in practice but it is not at all the only choice.

In the second part of the paper, we present the existing literature on CBI endogeneity. In particular, we identify two sources determining why societies choose to give fighting inflation a high policy priority. First, there are cultural differences, which help to classify societies according to inflation aversion. Second, political interest groups may have a specific interest in keeping inflation low and if they are strong enough they may be able to affect the political outcome in their favor.

Regarding the choice of CBI versus the other potential instruments, we discuss the literature looking at political, legal and economic determinants of this choice. For instance, higher costs of changing the legal status of central banks in terms of political difficulties may lead to an adoption of CBI. Political freedom may be a condition conducive to implementing CBI. So while countries move forward towards greater political freedom we would expect CBI is chosen more and more often. If for some reason CBI has already been established then a ‘culture of law’ may help to prevent any change to the central bank law. Finally, when labor markets are characterized by a strong union, appointing a conservative central banker as president of an independent central bank may not be the right solution. On the other hand, Rogoff’s (1985) result can be

resurrected when labor markets are atomistic or when the outside option for unions is defined in real terms.

Although our framework for analyzing monetary policy arrangements is more refined than the usual CBI argument, it is still quite crude. For instance, it does not allow for much flexibility in terms of informal arrangements. In an interesting case study of France, Italy, and the UK, Cobham et al. (1999) emphasize the importance of informal CBI in the conduct of monetary policy. They show changes in average inflation were not always accompanied by changes in the degree of CBI and changes in the formal degree of CBI did not always lead to the expected changes in inflation rates. Another point noted by several authors is public support for the central bank needs to be strong enough to make the implementation of (sometimes harsh) monetary policy measures successful (Posen 1995, Bofinger et al. 1998, Hayo 1998). Within the scope of this paper, however, we cannot do justice to these refinements.

There are several areas where further research would be necessary. First, we think there is more to be learned about the causes for choosing anti-inflationary policy institutions by analyzing survey data. In particular, one could combine macro and micro level information in a panel data set to address a multitude of interesting questions. Second, the empirical evidence for the interest group argument is still ambiguous. In addition, one could fruitfully look at other interest groups apart from the financial sector. Even more can be learned about why societies choose CBI and not one of the other possible design instruments. Here the empirical results are quite weak and much more energy has to be spent on constructing appropriate dummy variables that capture relevant characteristics of a country's legal, political and economic framework.

## References

- Albanesi, S., V.V. Chari, and L.J. Christiano (2001), How Severe is the Time Inconsistency Problem in Monetary Policy?, *NBER Working Paper* 8139, February.
- Alesina, A. (1988), Macroeconomics and Politics, *NBER Macroeconomic Annual* Cambridge (Mass.), MIT-Press, 13-52.
- Alesina, A., N. Roubini, and G. Cohen (1997), *Political Cycles and the Macroeconomy*, Cambridge (Mass.): MIT-Press.
- al-Nowaihi, A. and P. Levine (1994) Can Reputation Resolve the Monetary Policy Credibility Problem?, *Journal of Monetary Economics* 33, 355-380.
- Bagheri, F.M. and N. Habibi (1998), Political Institutions and Central Bank Independence: A Cross-country Analysis, *Public Choice* 96, 187-204.
- Barro, R. J. and D. Gordon (1983), Rules, Discretion, and Reputation in a Positive Model of Monetary Policy, *Journal of Monetary Economics* 12, 101-121.
- Berger, H. (1997) *Konjunkturpolitik im Wirtschaftswunder*, Tübingen: Mohr-Siebeck.
- Berger, H. and J. de Haan (1999), A State Within a State? An Event Study on the Bundesbank, *Scottish Journal of Political Economy* 46, 17-39.
- Berger, H., S. C. W. Eijffinger and J. de Haan (2000), Central Bank Independence: An Update of Theory and Evidence, *Journal of Economic Surveys* (forthcoming).
- Berger, H., C. Hefeker and R. Schöb (2001), Optimal Central Bank Conservativeness and Monopoly Labor Unions, CESifo-working paper 427.
- Berger, H. and U. Woitek (1997), How Opportunistic Are Partisan German Central Bankers: Evidence on the Vaubel Hypothesis, *European Journal of Political Economy* 13, 807-21.
- Bernanke, B., T. Laubach, F. Mishkin and A. Posen (1999) *Inflation Targeting*, Princeton: Princeton University Press.
- Blinder, A. (1998) *Central Banking in Theory and Practice*, Cambridge: MIT-Press.
- Blinder, A. (1999) Central Bank Credibility: Why Do We Care? How Do We Build It?, NBER Working Paper 7161.
- Bofinger, P., C. Hefeker and K. Pflieger (1998) *Stabilitätskultur in Europa*, Stuttgart: Deutscher Sparkassen-Verlag.

- Briault, C.B., A.G. Haldane and M.A. King (1996), Independence and Accountability, *Bank of England Working Paper* No. 49, April.
- Campillo, M. and J.A. Miron (1997), Why does Inflation Differ Across Countries?, in: C.D. Romer and D.H. Romer (eds.), *Reducing Inflation: Motivation and Strategy*, Chicago: University of Chicago Press.
- Cobham, D., S. Cosci, F. Mattesini, and J.-M. Serre (1999), The nature and relevance of central bank independence: an analysis of three European countries, *mimeo*, University of St. Andrews.
- Collins, S.M. and Giavazzi, F. (1993), Attitudes Towards Inflation and the Viability of Fixed Exchange Rates: Evidence From the EMS, in: M. Bordo and B. Eichengreen (eds.), *A Retrospective on the Bretton Woods System: Lessons for International Monetary Reform*, Chicago: University of Chicago Press, 547-577.
- Coricelli, F., A. Cukierman and A. Dalmazzo (2000), *Monetary Institutions, Monopolistic Competition, Unionized Labour Markets and Economic Performance*, CEPR Discussion Paper No. 2407.
- Cubitt, R.P. (1992), Monetary Policy Games and Private Sector Precommitment, *Oxford Economic Papers*, 44, 513-30.
- Cukierman, A. (1992), Central Bank Strategy, Credibility, and Independence, Cambridge (Mass.): MIT Press.
- Cukierman, A. (1994), Commitment through Delegation, Political Influence and Central Bank Independence, in: J.O. De Beaufort Wijnholds, S.C.W. Eijffinger and L.H. Hoogduin (Eds.), *A Framework for Monetary Stability*, Dordrecht: Kluwer, 55-74.
- Cukierman, A. and F. Lippi (1999), Central Bank Independence, Centralization of Wage Bargaining, Inflation and Unemployment – Theory and Some Evidence, *European Economic Review*, 43 1395-1434.
- Cukierman, A. and S.B. Webb (1995), Political Influence on the Central Bank: International Evidence, *World Bank Review* 9, 397-423.
- De Haan, J. and van't Hag, G.J. (1995), Variation in Central Bank Independence Across Countries: Some Provisional Empirical Evidence, *Public Choice* 85, 335-351.
- De Jong, E. (2000), Why are price stability and statutory independence of central banks negatively correlated? The Role of Culture, *mimeo*, University of Nijmegen.

- Drazen, A. (2000a) *Political Economy in Macroeconomics*, Princeton: Princeton University Press.
- Drazen, A. (2000b) The Political Business Cycle after 25 Years, *NBER-Macroeconomics Annual*, forthcoming.
- Eichengreen, B. (1994) *International Monetary Arrangements for the 21st Century*, Washington: Brookings Institution.
- Eichengreen, B. and C. Wyplosz (1993) The Unstable EMS, *Brookings Papers on Economic Activity* 1, 51-124.
- Eijffinger, S. C. W. and J. de Haan (1996), *The Political Economy of Central-Bank Independence*, Princeton Special Papers in International Economics No. 19.
- Eijffinger, S. C. W. and M. Hoeberichts (1998) The Trade Off Between Central Bank Independence and Conservativeness, *Oxford Economic Papers* 50, 397-411.
- Eijffinger, S. and M. van Keulen (1995), Central Bank Independence in Another Eleven Countries, *Banca Nazionale del Lavoro Quarterly Review* 192, 39-83.
- Emminger, O. (1986) *DM, Dollar, Währungskrisen*, Stuttgart: Deutsche Verlags-Anstalt.
- Farvaque, E. (2000), Political System and Central Bank Independence, *mimeo*.
- Forder, J. (1996), On the Measurement and Assessment of 'Institutional' Remedies, *Oxford Economic Papers* 48, 39-51.
- Forder, J. (1998), Central Bank Independence – Conceptual Clarifications and Interim Assessment, *Oxford Economic Papers* 51, 307-334.
- Forder, J. (2001), The Theory of Credibility and the Reputation-bias of Policy, *Review of Political Economy* 13, 5-25.
- Fischer, S. and J. Huizinga (1982), Inflation, Unemployment and Public Opinion Polls, *Journal of Money, Credit and Banking* 14, 39-51.
- Giavazzi, F. and A. Giovannini (1989) *Limiting Exchange Rate Flexibility*, Cambridge (Mass.): MIT-Press.
- Giavazzi, F. and M. Pagano (1988) The Advantage of Tying One's Hands: EMS Discipline and Central Bank Credibility, *European Economic Review* 32, 1055-1082.

- Giordani, P. and G. Spagnolo (2001), Constitutions and Central-Bank Independence: An Objection to “McCallum’s Second Fallacy”, *mimeo*, Stockholm School of Economics.
- Grilli, V., D. Masciandaro and G. Tabellini (1991), Institutions and Policies, *Economic Policy* 6, 341-392.
- Gros, D. and C. Hefeker (2000) One Size Must Fit All. National Divergences in a Monetary Union, CESifo-Working Paper 326.
- Grüner, H. P. (1996) Monetary Policy, Reputation and Hysteresis, *Zeitschrift für Wirtschafts-und Sozialwissenschaften* 116, 15-29.
- Grüner, H. P. and C. Hefeker (1995) Domestic Pressures and the Exchange Rate Regime: Why Economically Bad Decision Are Politically Popular, *Banca Nazionale del Lavoro Quarterly Review* 194, 331-350.
- Guzzo, V. and A. Velasco (1999), The Case for a Populist Central Banker, *European Economic Review* 43, 1317-1344.
- Hayo, B. (1998), Inflation Culture, Central Bank Independence and Price Stability, *European Journal of Political Economy* 14, 241-263.
- Hayo, B. (1999a), Knowledge and Attitude Towards European Monetary Union, *Journal of Policy Modeling* 21, 641-651.
- Hayo, B. (1999b), Public Support for Market Reforms in Eastern Europe, *Studies in Public Policy* 321, Centre for the Study of Public Policy, Glasgow.
- Hefeker, C. (1997) *Interest Groups and Monetary Integration. The Political Economy of Exchange Regime Choice*, Boulder: Westview-Press.
- Hillman, A. L. (1999) Political Culture and the Political Economy of Central Bank Independence, in: M. Blejer and M Streb (eds), *Major Issues in Central Banking, Monetary Policy, and Implications for Transition Economies*, Amsterdam: Kluwer.
- Hofstede, G.H. (1980), *Cultures Consequences: International Differences in Work-related Values*, Beverly Sage Publications.
- Jensen, H. (1997), Credibility of Optimal Monetary Delegation, *American Economic Review* 87, 911-920.

- Jerger, J. (2001), How Strong is the Case for a Populist Central Banker? A Note, *European Economic Review*, forthcoming.
- Kenen, P. (1995) *Moving Beyond Maastricht*, Cambridge: Cambridge University Press.
- Kydland, F. W. and E. C. Prescott (1977), Rules Rather than Discretion: The Inconsistency of the Optimal Plans, *Journal of Political Economy* 85, 473-491.
- Lawler, P. (2000), Centralised Wage Setting, Inflation Contracts, and the Optimal Choice of Central Banker, *Economic Journal* 110, 559-75.
- Lindner, A. (1999) Long Term Appointment of Central Bankers: Costs and Benefits, University of Frankfurt, mimeo.
- Lippi, F. (1999a), Revisiting the Case for a Populist Central Banker, *European Economic Review* (forthcoming).
- Lippi, F. (1999b), Strategic Monetary Policy with Non-Atomistic Wage Setters: A Case for Non-Neutrality, CEPR Discussion Paper, 2218.
- Lippi, F. (2000) Median Voter Preferences, Central Bank Independence and Conservatism, *Public Choice* 105, 323-338.
- Lohmann, S. (1992), Optimal Commitment in Monetary Policy: Credibility versus Flexibility, *American Economic Review* 32, 273-286.
- Lohmann, S. (1998), Federalism and Central Bank Independence: The Politics of German Monetary Policy, 1957-92, *World Politics* 50, 401-446.
- Maier, P., J.-E. Sturm, J. de Haan (2000), Political Pressure on the Bundesbank: An Empirical Investigation Using the Havrilesky Approach, *mimeo*, University of Groningen.
- Mangano, G. (1998), Measuring Central Bank Independence: A Tale of Subjectivity and of its Consequences, *Oxford Economic Papers* 50, 468-492.
- McCallum, B. (1995), Two Fallacies Concerning Central-bank Independence, *American Economic Review* 82, 273-286.
- Moser, P. (1999), Checks and Balances, and the Supply of Central Bank Independence, *European Economic Review* 43, 1569-1593.
- Muscattelli, A. (1998), Optimal Inflation Contracts and Inflation Targets with Uncertain Central Bank Preferences: Accountability through Independence?, *Economic Journal* 108, 529-42.

- Neumann, M. J. M. (1991), Precommitment by Central Bank Independence, *Open Economies Review* 2, 95-112.
- Obstfeld, M. and K. Rogoff (1996), *Foundations of International Macroeconomics*, Cambridge: MIT-Press.
- Posen, A.S. (1993), Why Central Bank Independence Does Not Cause Low Inflation, in: R. O'Brian (ed.), *Finance and the International Economy* 7, The Amex Bank Review Prize Essays, Oxford: Oxford University Press, 40-65.
- Posen, A. (1995), Declarations are not Enough: Financial Sector Sources of Central Bank Independence, in: B. Bernanke and J. Rotemberg (eds.), *NBER Macroeconomic Annual 1995*, Cambridge: MIT Press.
- Posen, A. (1998) Central Bank Independence and Disinflationary Credibility. A Missing Link?, *Oxford Economic Papers* 50, 335-359.
- Prast, H. (1996), Inflation, Unemployment and the Position of the Central Bank: The Opinion of the Public, *Banca Nazionale del Lavoro Quarterly Review* 49, 415-454.
- Rogoff, K. (1985), The Optimal Degree of Commitment to an Intermediate Monetary Target, *Quarterly Journal of Economics* 100, 1169-1190.
- Rose, R. (1998), What is the Demand for Price Stability in Post-Communist Countries?, *Problems of Post-Communism* 45, 43-50.
- Soskice, D. and T. Iversen (2000), The Non Neutrality of Monetary Policy with Large Price or Wage Setters, *Quarterly Journal of Economics* 115, 265-84.
- Svensson, L. E. O.(1997) Optimal Inflation Targets, 'Conservative' Central Banks and Linear Inflation Contracts, *American Economic Review* 87, 98-114.
- Temple, J. (1998), Central Bank Independence and Inflation: Good News and Bad News, *Economics Letters* 61, 215-219.
- van Lelyveld, I. (1999a), Inflation or Unemployment? Who Cares?, *European Journal of Political Economy* 15, 463-84.
- van Lelyveld, I. (1999b), Inflation Aversion in Europe, paper presented at the EEA conference in Santiago de Compostela, September.



- Vaubel, R. (1997a), The Bureaucratic and Partisan Behavior of Independent Central Banks: German and International Evidence, *European Journal of Political Economy* 13, p. 201-24.
- Vaubel, R. (1997b), Reply to Berger and Woitek [How Opportunistic Are Partisan German Central Bankers: Evidence on the Vaubel Hypothesis], *European Journal of Political Economy* 13, 823-27.
- Voigt, S. (2000), Institutionen kanalisieren Verhalten – zu verhaltensbeschränkenden Wirkungen von unabhängiger Justiz und Zentralbank, *mimeo*.
- Walsh, C. E. (1995), Optimal Contracts for Central Bankers, *American Economic Review*, 85 150-67.