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CENTRAL BANK INDEPENDENCE IN THE EUROPEAN UNION

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ABSTRACT

This paper comments upon the legislative changes adopted in the EU to increase the independence of national central banks (CBI). The conclusion is that much has been done but the reforms required by the Maastricht Treaty are still incomplete. The different involvement of national central banks in financial regulation and supervision is discussed together with its consequences for CBI. Two macroeconomic processes that interact with CBI are also considered: the wage setting mechanism and the adjustment of fiscal imbalances. The argument is made that, under certain conditions, both processes tend to favour CBI because it helps to reach their own objectives. CBI is therefore, at least in part, "endogeneous": there is no justification for giving up institutional monetary rigour on the ground that fiscal and wage policies are obstacles to disinflation. A discussion of the independence of the future European Central Bank, including the problems of its accountability and of its relationship with the Commission, concludes the paper.

KEY WORDS: Central bank independence; European Central Bank; European Union; Economic and Monetary Union (EMU); Maastricht Treaty

JEL CLASSIFICATION: E58, F33

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1. Introduction

The Maastricht Treaty requires the central banks of the countries in the European Union (EU) to become fully "independent" before the start of the third phase of the Economic and Monetary Union (EMU) and the creation of the European Central Bank (ECB). The Treaty dictates several conditions for a central bank to be considered "independent". Central bank independence (CBI) is therefore *a condition* for participating in the EMU, to be considered together with the macroeconomic convergence criteria on inflation, interest and exchange rates and on the Governments' financial deficits and debts. In this sense the relationship between CBI and a credible and permanent commitment to fixed exchange rates is one of *complementarity*. Fixing exchange rates and unifying currencies requires a common monetary policy. In order to be able to delegate their monetary policies to a supernational agency, the countries must first free their central banks of national political influences.

But, from the point of view of an individual country, CBI can also serve as a *substitute* for the commitment to peg its exchange rate to the currency of another country reputed for its monetary stability. The market will consider the country's "monetary constitution" as a signal of its serious search for price stability. In fact CBI can become *more* valuable precisely when a country *abandons* a system of fixed exchange rates.

This two-faced nature of the relationship between CBI and exchange rate regimes is evident in the recent monetary developments of the EU. Section 2 of this paper summarizes and comments upon the institutional and legislative changes adopted in the Union to increase CBI. The picture shows that monetary reforms are discussed and enacted as a consequence of the Maastricht Treaty, but measures to strengthen CBI have been taken - or are under consideration - also in countries that have left the European Monetary System (EMS) and/or will not be able or wanting to join the third phase of EMU in the next years. Italy is in this latter group of countries and section 2 will devote special attention to the Italian case.

From the evidence presented in section 2 it is probably correct to conclude that even if the European plan of monetary unification will fail, progress toward CBI will continue, with different speeds, in the large majority of EU's countries.

An element that creates important institutional differences among EU's central banks is the degree of their involvement in financial regulation, supervision and in other prudential policies. Some theoretical and empirical work has been done to discuss whether it is right to give prudential responsibilities to central banks and if this can have a negative impact on their independence. Section 3 contains several comments on these issues, taking into account the European cases.

Section 4 is devoted to some general theoretical topics that are relevant for understanding the development of CBI in the EU. In particular the section deals with the issue of the "endogeneity" of CBI and analyzes the interaction of the autonomy of monetary policy with wage-setting policies and with fiscal adjustment.

The European System of Central Banks (ESCB) will be composed by National Central Banks (NCBs) and by the ECB: for the latter's independence a perfect independence of NCBs is a necessary but insufficient condition. There are issues specifically concerning the independence of the future ECB: some of them are considered in section 5.

Section 6 briefly recalls the main conclusions of the paper.

2. Institutional independence of EU's central banks: statutory and legislative changes.

When considering the convergence of EU member countries toward the Maastricht conditions for being admitted to the final phase of EMU, it is often the case that only the macroeconomic criteria are mentioned and discussed. But no less importance is attributed by the Treaty to the structural criteria that define the legislative and institutional convergence of the countries' monetary authorities toward the requirements of CBI. One of these requirements, forbidding central bank financing of

the public sector, had even to be met for entering EMU's second phase, started on January 1st, 1994.

A very clear and careful review of this type of convergence was prepared and published by the Bank of Japan (BoJ, 1995, pp. 63-52 and particularly Table 6) in its Quarterly Bulletin. While it is based on information as of July 1994 it covers all the important changes of the last years and can be considered sufficiently up-to-date even after the more recent surveys by the European Monetary Institute (EMI, 1995a, pp.100-110 and EMI, 1995b, pp.100-136) and by the Bank for International Settlements (BIS, 1995, pp.87-93). It would be useless to reproduce in this paper what is analyzed in these reports. This paragraph is therefore devoted to a very simple numerical synthesis of the information reported in the cited sources and to some comments on specific points, including the Italian case.

Four rows of Table 1 are labeled with the four criteria of institutional convergence that can be detected in the text of the Maastricht Treaty and that are used by BoJ(1995) to organize the relevant information. The columns of the table show the current levels of the average degree of CBI in the EU-12 countries and the changes resulting after 1991 in the four criteria. Measures of compliance with the criteria of convergence have been assigned, ranging from 0 to 1. The total average degree is now around 2/3 of the legal maximum, more than doubled with the recent reforms. The largest improvement has been obtained in the requirement that prohibits lending to government, for two reasons: it was by far the less respected and the countries had to comply with it already at the beginning of the 2nd phase, January 1st 1994. The criterion of independence based on the role of price stability in the statutory objectives of central banks has the lowest current level of compliance and records a small recent improvement. The political cost of this requirement is probably the highest.

Table 2 shows the situation of individual countries, which still appears rather diversified. Reforms are still needed in several countries. The conclusion is that much has been done but there is still scope for working toward a more complete reform of central banks.

In Italy reforms of the powers to set the discount rate and reserve requirements and of the monetary financing of the Government were enacted, in 1992 and in 1993, precisely when pessimism on EMU was increasing and/or the lira was floating dramatically. Also Spain is an example of how CBI can be increased in spite of the difficulties to stick to the EMS parities and of the worsening prospects of adhering to EMU. Also in the UK, Greece and Portugal there are serious proposals or discussions for increasing CBI: which clearly often appears as a substitute for the possibility or the desire to commit to fixing the exchange rate and to participating in an accelerated plan of monetary unification. The institutional reform process will therefore probably continue even if the unification were to fail.

It has to be noted that tables like 1 and 2 try to assess the *de jure* independence, which can be different from the *de facto* CBI. The difference can be substantial and not only because the adherence to the law can be imperfect, as pointed out by Cuckierman particularly for LDCs (Cuckierman et al., 1992; Cuckierman, 1993a) and by Hochreiter (1994) and Steinherr (Galimberti, 1994, p.35) for Eastern European economies "in transition", but also because legal independence itself is bound to be imperfectly defined and full of gaps. By applying sufficient political pressure to at least one of the gaps, *de facto* CBI can be made appreciably lower than legal independence. Table 3 points to the main conceptual weaknesses in the definition of each of the independence requirements. Obviously it is also possible for a legally dependent but "conservative" (Rogoff, 1985) central banker to behave in a strongly "independent" fashion.

The state and the past and future evolution of CBI in the EU could therefore look different if actual independence were considered instead of the legal one. The picture would look even more complicated and abounding in nuances if a third profile of CBI were taken into account: the *reputation* of independence enjoyed by each NCB. This is a crucial dimension of CBI because it ultimately determines its impact on the credibility of monetary policy. The relation between the three dimensions of independence can turn out to be rather subtle and contradictory, at least in the short

and medium run. Reputation can depend on actual CBI but it is sometimes influenced by legal CBI, even if larger than *de facto* autonomy. In principle all the six possible orderings of the three dimensions are admissible. An hypothetical example is shown in Table 4 conjecturing an association of each ordering with certain countries, based only on the author's personal impressions. Both Germany and the US have a reputation of CBI which is probably higher than both the actual and the legal independence. The latter is very low in Britain which enjoys a better reputation due to a growing actual independence. Recently reformed EU central banks, like the ones of France, Spain and Belgium have a very high legal independence, while their reputation is still suffering from a long story of subservience. Recently reformed LDCs and Eastern Europe's central bank have a relatively high legal independence, but "what is written on paper is still a dream for the future" (Steinherr as cited in Galimberti, 1994, p.35). The case of Italy will be discussed below: but it is probably an example of actual CBI higher than legal independence and where reputation must still get the full benefit of recent legal reforms.

From a certain point of view one could say that there is a fourth dimension of CBI: *accountability*. Without accountability independence is incomplete and insecure. But accountability is a somewhat vague concept, very difficult to assess in an objective way. It is very much connected with the existence of a statutory target of price stability, which becomes the basis for judging the behaviour of the central bank and, at the same time, can serve as an objective criterion for the central bank to defend its policies. But even with a precise statutory target the accountability can be very indirect and informal or very precise, direct and explicit. The first is the case of Germany, where the Bundesbank is in fact accountable to the general public which would strongly react to any surge in inflation. The opposite example of highly explicit accountability cannot be found in Europe: it is the famous case of New Zealand where inflation targets are written in a yearly contract between the central bank and the Government and where the Governor can loose his job if the target is not met.

All the four dimensions of CBI should be carefully monitored in the EU during the next years; progress should be made in measuring them as well as in understanding their complex relationships. In due time they will all exert an influence on the feasibility and on the independence of the ECB, a topic discussed in this paper's section 5.

To conclude this section some notes on the case of Italy's CBI might be of interest. For Italy international pressures to strengthen the trend toward a higher CBI are most welcome. In spite of the reforms of the last years some crucial steps have still to be taken and the domestic mood does not seem to favor an urgent effort in making further progress in the near future. This could be a problem if the country tries to be in the "first speed" group toward EMU's 3d phase. But it is an even more dangerous attitude if CBI has to function as a substitute for monetary union and the lira has to stay out of the common currency for a longer period.

The Bank of Italy has always presented itself as a very independent institution and has never insisted on obtaining an increase of its autonomy. This attitude can in part be explained with the widely acknowledged quality and prestige of its directors and with the know-how and the *de facto* influence of the Bank in monitoring and designing the general macroeconomic policies of the country. All the reforms that have been improving CBI originated (or, at least, appeared to the public opinion as coming) from pressures external to the Bank: from the "divorce" in 1981, which looked as an enlightened initiative of the Treasury, to the recent Maastricht-driven changes. Economists asking for a stronger CBI have never found clear consent and support by Bank of Italy's officials, researchers and publications.

In fact, while the legal independence of the bank of Italy is now very high with respect to the second and third criteria of Table 1, there is not even a plan to comply with the first (and probably the most important) Maastricht requirement for an explicit statutory price stability objective, notwithstanding an increasing weight of price stability in Italian monetary policy's announcements. As far as the fourth criterion of Table 1 is concerned, after Governor Ciampi became Prime Minister the existing

procedures for appointing the Governor and the directorate, while ending, according to the Bank's tradition, with top quality designations, could not prove to be sufficiently quick, transparent and above political gossip. Moreover the appointment for life (which is equivalent to the possibility of being dismissed any time) should probably be transformed in a long but limited term of office with explicit provisions on dismissal similar to the ones contained in the statute of the ECB.

It is worth while reporting the Bank of Italy's argument against the reform of its statute introducing an explicit primary objective of price stability. In fact the argument has two parts, that lend themselves very well to introducing the topics of the next two sections of this paper: the separation between supervisory and monetary agencies (sect. 3) and the interaction between CBI, wage setting policies and fiscal adjustment (sect. 4).

The first part of the argument is that "the safeguarding of savings and the connected quest for monetary stability called for in the Italian Constitution are basic principles that [sufficiently] motivate the Bank's determined anti-inflation commitment" (Visco, 1995, p.10). The problem is that "the safeguarding of savings" implies both monetary and prudential targets, both monetary and financial stability: to the extent that some conflicts might develop between these targets, the primacy of price stability is not guaranteed. This issue will be touched upon in the next section. Here suffice it to say that the Bank of Italy's prudential and regulatory powers are among the largest in European central banks (see Table 7) and that during the past decades the use of these powers has often produced measures to facilitate the financing of the public sector and to engineer financial repression with the justification of preserving financial stability.

The second part of the argument is that "to maintain monetary stability in Italy, and specifically to achieve a low medium-term inflation target, the commitment of the central bank will have to be supported by a rational wage bargaining process and adjustment of the imbalance in the public finances" (Visco, 1995, p.13). "No degree of autonomy can guarantee the objective of price stability if other areas of economic policy are set on divergent paths. Indeed, central bank autonomy offers no escape from

the consequences of mismanagement of fiscal and incomes policies" (Padoa-Schioppa, 1994, p.544). This reasoning seems to go beyond the usual caveat that *short-run* inflation is not under direct control of the central bank. It looks like a sort of unwarranted generalization of the extreme case of the "unpleasant mathematics" by Sargent and Wallace. Section 4 of this paper tries to support the opposite idea: that both fiscal and incomes policies might find that CBI makes it easier to optimize their objective functions.

3. Central bank independence and prudential responsibilities.

After Austria, Finland and Sweden entered the EU only half (8/15) of the member countries' central banks have supervisory and prudential responsibilities (see Table 5). There is a line of thought according to which the separation between the agencies responsible for monetary and prudential policies is a necessary condition for the complete independence of monetary policy management. In fact, while no correlation seems evident between the most common measures of independence and the degree of involvement of central banks in prudential management, empirical evidence supports the thesis that central banks without supervisory responsibility have a better inflation track record (Table 6).

The most common argument for the separation of the two functions is that their combination might lead to a conflict of interest and to an inflationary bias of central banks' monetary management caused by concern with banks' health, with the stability of bank clients' income, of interest rates and security prices as well as by moral hazard in bailout policies. "There might be a temptation to delay or moderate a monetary tightening with a view to averting a sudden collapse in asset prices precisely at a time when the inflation outlook is deteriorating ; alternatively, a preventive tightening designed to contain the build-up of speculative pressures and hence broader financial instability could risk weakening the real economy" (BIS, 1995, p.117). Another important argument is that there is the danger that "those in charge of monetary policy

are tarred with the supervisors' brush" (Financial Times, 1995b) and that losses of credibility in prudential controls can contaminate the reputation of the central bank in conducting monetary policy. A connected danger is that "a central bank that intervenes in a too wide range of activities is likely to find it harder to justify keeping political pressures at bay" (The Economist, 1993, p.68). The most important argument against separation is that the effectiveness of prudential policies benefits by the information collected by the central bank when it manages the payment system and conducts its standard monitoring as a regular lender to many banks. A thorough discussion of the issue is not among the purposes of this paper. It is enough for this section to make a series of specific points on the matter.

The first point is that, at least in the EU and in preparation of the EMU, the problem should be discussed in a more open and deep form, disregarding the bureaucratic interests that tend to keep the *status quo*. Currently only in the UK the debate seems to acquire some weight, due to the gaps in prudential controls emerged with the BCCI and Barings cases (see, for instance, Financial Times, 1995b) and to the rather recent official entrustment of supervisory powers to the Bank of England: but also "the Old Lady clings to the poisoned chalice" (Financial Times, 1995c). It is important to deepen the analysis of this issue also because the substantial differences between the organization of prudential responsibilities of the EU countries (see Table 7) could endanger the compactness of the ESCB: this argument will be taken up again in section 6.

A second point is that the nature and importance of the problem of separating monetary and prudential policies depend on the kind of supervisory and prudential schemes that are in force in a country. With "light" forms of supervision, largely based on disclosure rules, with minimal discretionary powers and a credible exclusion of bailouts, the allocation of prudential responsibilities matters less and in a different sense than when supervisory processes are intensive, highly discretionary, "intrusive" and ready to support banks in distress. A stimulating example of the first type are the

new banking supervision arrangements adopted by the very independent price-stabilizing Reserve Bank of New Zealand (1994 and 1995 pp.73-78).

The third point is that it does not make any sense to plan the total exclusion of the central bank from taking part in the technical implementation of bank supervision. Also the Bundesbank model of separateness, for instance, allows a very important role to the collaboration of regional central banks with the governmental supervisory authority. What is really at issue is the political responsibility of the central bank for the final results of prudential controls and regulations.

The fourth point is that there is not only a problem of independence and credibility of monetary policy, but also of independence and credibility of prudential policies. The optimality of the allocation of supervisory functions is required also to maximize the effectiveness of these same functions (Bruni 1995). The literature on the credibility of prudential policies is very scarce. These policies can suffer from a time-inconsistency problem similar to the Barro-Gordon problem of monetary policy. Their credibility depends on rationally expected values of the parameters of the prudential authority's utility function. It can be argued (Bruni and Paternò, 1995: sect. 2) that two crucial parameters, from this point of view, are the sensitivity to the danger of systemic damages that can be caused by the difficulties of an individual bank (call it s) and the sensitivity to the social costs of allocative distortions that can be caused by prudential controls and bailouts (call it d). It is an intuitive result that a disciplining no-bailout policy is optimal and credible only for sufficiently low values of s and high values of d . It is also reasonable to think that for a central bank, which is in charge of the interbank payment system, the ratio s/d naturally tends to be on the high side. Therefore it is better, for the effectiveness and credibility of prudential policies and for the working of market discipline of banks' riskiness, that the political responsibility for certain prudential decisions is clearly located outside the central bank. The latter could be authorized, for instance, to lend to the *banking system* for coping with *liquidity* crises and could be responsible for authorizing bank openings (based on objective criteria), but should not be in charge of supporting *individual institutions* confronted

with *solvency* problems nor should be responsible for arranging bank closures and managing bank crises.

The fifth and last point, on the issue of keeping monetary and prudential policies in separate agencies, is about the consequences of the blurring of traditional boundaries between banks and the rest of the financial system. To the extent that the central bank has prudential responsibilities this development enlarges its supervisory functions over a rapidly growing set of financial operations, contracts and institutions that have decreasing connections with its expertise in monetary affairs. Its bureaucratic power increases disproportionately, while the economies of scope of a joint exercise of monetary and prudential functions tend to vanish. The accountability and transparency of monetary responsibilities suffer. "Covering an increasing range of activities and institutions is not without potential costs" (Borio and Filosa, 1994, p.28). This is an argument in favour of a carefully balanced framework for prudential policies and controls, clearly limiting the role of the central bank. In Italy a solution has been adopted (see Padoa-Schioppa 1994, p.545) based on the distinction between supervision aimed to foster the *efficiency* of financial markets and supervision aimed to preserve their *stability*. Only the latter is entrusted to the Bank of Italy which, from the "stability point of view", is the prudential authority for the whole financial system. To this author the distinction seems insufficient to delimit the involvement of the central bank, to restrain moral hazard and to avoid regulatory forbearance, excessive discretionality as well as the uncontrolled interference of political pressures in the management of financial crises. The objective of "stability" is too wide and pervasive: it goes so far as serving as a justification for the fact that even the administration of the anti-trust regulation in the banking system is delegated to the Bank of Italy. The scheme causes also costly duplications of controls: an example is the mutual funds industry which falls under the supervision of the securities Commission but it is also minutely supervised and regulated by the Bank of Italy on the ground that it is crucial for financial stability.

A possible conclusion of this section is that the problem must be carefully defined: what is at issue is not whether national central banks should be entrusted with prudential tasks, but how an optimal prudential framework must be designed leaving aside present bureaucratic interests. One characteristic of the optimal framework is that it sets a precise boundary of the central banks' prudential responsibilities. But an optimal prudential institutional setting has many other connected aspects that increase the credibility and the effectiveness of both monetary and prudential policies. Probably, a multiplicity of prudential authorities are needed, with well defined goals, limited discretionality and clearly specified rules of behaviour. At the EU level this increases the need of harmonization and centralization, to be touched upon below (in section 5).

4. Endogeneous independence?

The "question of endogeneity" was formulated as a critique to the prevailing literature on CBI by Adam Posen (1993 and 1994b) who suggested that the autonomy of the central bank is "endogenous to the political effectiveness of opposition to inflation in the society". Among the relevant indicators of the strength of the social interest in price stability it is possible to include the power of the financial sector and the weakness of labour. Posen offers some empirical support to its idea including a disproof of the impact of CBI on the credibility of disinflation (Posen, 1994a) which leads to explain the acknowledged direct correlation between CBI and price stability with the fact that both depend on structural factors determining the social opposition to inflation.

In a different spirit, an elegant model was built by Cukierman (1993b) which endogenizes CBI without implying any criticism to the normative theory based on the time inconsistency of monetary policy. Among other factors that cause the choice of a higher CBI, Cukierman shows the influence of political instability and of the degree of polarization of political parties with respect to the structure of public expenditure.

Within his model a surprising result is also obtained according to which the central bank is granted less independence the larger the relative concern of political authorities for price stability, because this concern decreases the benefits of any institutional commitment. A similar concept has been expressed by Charles Goodhart (as quoted by Galimberti, 1994, p.31): "a Labour party gains more credibility by granting independence, because it starts from a lower credibility base; ... and if you are a left-wing party, it does not very much if the levers of monetary policy are in the hands of a conservative government or of a central bank".

"Endogenous" explanations of CBI are also discussed by Sylvia Maxfield (1994) with reference to developing countries. Ceding authority to the central bank the government provides a signal about the likelihood that the nation's future policies will protect the business climate; CBI means that the central bank is allowed to function more nearly as "agent" of private financiers rather than "agent" of the Government: this is most useful when the country is looking for international financing. According to Maxfield this argument is also applicable to the EU countries where the impetus for the wave of change in central bank status comes from the Maastricht Treaty not only directly, as a consequence of the specific requirements for CBI, but also indirectly, as a consequence of the impact of Maastricht on capital mobility in the EU and on the need to prevent capital flight in order to maintain currency parity.

It is apparent that discussing the issue of "endogeneity" is a way to go through the whole theory of CBI and to analyse the relationship between the autonomy of the central bank and other institutional, political and social features of a country. This line of reasoning tends to bring the analysis beyond the time inconsistency argument for CBI, toward a more general type of reasons for CBI that might be called "preferred agency" motive (Bruni and Masciandaro, 1991, and Bruni, 1994, p.42): society, "the market", or prevailing interest groups desire to maximize the influence of the central bank on the making of monetary policy because its expected behaviour is in their favour. In a sense the case where the government decides to "tie its hands" with CBI is a very special case of this "preferred agency" motive.

It would be interesting to analyse the factors that endogenously explain the current and prospective degree of CBI in the different EU countries. But there is no room in this paper for such an ambitious aim. The rest of this section will therefore be devoted to some notes on more specific issues. Consider two macroeconomic decision processes that can influence inflation in the short run: the wage-setting mechanism and the adjustment of fiscal imbalances. If they help disinflation, the value added of CBI is smaller (*à la* Posen); but the same is true if they act against price stability. In the latter case the argument can be made that for monetary stability CBI has to be "supported by a rational wage bargaining process and by the adjustment in the public finances" (see the Italian case as presented above in section 2). It is therefore important to understand what is the *direct* interaction between these mechanisms and CBI. The argument is made below that, under certain conditions, the two decision processes favour CBI because it helps them to reach their own objectives, through its effect on monetary stability. This means that CBI is in part "endogenous", but it also means that there is no excuse for giving up CBI on the ground that fiscal and incomes policies are an obstacle to disinflation. The theoretical arguments that follow may be of help in understanding some institutional developments that are taking place in the EU.

CBI and wage-setting

In several countries one has the impression that in the last years the attitude of the labour unions (and of the left-wing political parties) toward inflation-prone policy styles has changed. A corresponding change has probably taken place in their opinion on CBI. The most striking example is the UK Labour party which has been recently criticizing the Government for its weak action toward CBI and has asked to widen the role and the operational responsibility of the Bank of England (Financial Times, 1995a). At least in the case of Italy and, in a sense, France, a similar increasing leftist support for monetary stability and CBI can be detected. There may be several explanations for this development, including the abolition (in the case of Italy) of contractual wage indexation, the increasing wealth/income ratio of workers' and

complex strategies in a two party electoral game. But it is worth while exploring a particular rationale, based on the increasing cost of re-contracting nominal wages and guaranteeing *de facto* wage indexation.

Consider a situation where the nominal wage has been contracted in such a way as to optimize the expected real wage (OE in Figure 1), i.e. to set it at the level where a negatively sloped demand for labour crosses the long-run supply schedule, which is rigid on the full employment level : in the long run the workers maximize employment¹ But there is the possibility of short run, temporary shocks causing deviations of actual from expected inflation. Only with CBI the shocks will be counteracted by monetary policy which will avoid their accomodation keeping the increase in prices on the expected track. In this "model" the relevant characteristic of CBI is that it prevents inflation from leaving its planned path. Four types of stochastic, transitory shocks can take place: nominal and real, upward and downward. Is CBI desirable from the workers' point of view?

Let us make the crucial hypothesis that there are short-run costs in re-contracting nominal wages. When they are adjusted downward, these costs effectively limit the short-run adjustment to a proportion $(1 - w)$ of the change required in the long run: $0 \leq w \leq 1$ is a measure of downward wage rigidity, and the function $D(1-w)$, $D' > 0$, is the total cost incurred by the workers². When they are adjusted upward, the costs do not prevent the wage from immediately reaching its new equilibrium level and are equal to a constant r , times the percentage increase in the wage. As far as the price level is concerned, it is fully flexible upward while it is downward rigid: it decreases only $(1-p)$ times the percentage change required for long-run equilibrium.

Consider first a unitary upward nominal shock to prices, accomodated by monetary policy. To bring the real wage back to the optimal level, the nominal wage will have to be re-contracted. The workers will then incur the unitary cost r of re-contracting. With CBI the shock will not be accomodated, with no cost for the workers.

If there is an accomodated, unitary downward nominal shock to prices, the real wage will become too high (like OF in Figure 1): employment will suffer, in the short

run, to the extent that contracted nominal wages are not perfectly flexible. Let e be the elasticity of the demand for labour with respect to the real wage and n the elasticity of the workers' utility function with respect to the level of employment (see footnote 1). Given the hypothesized downward nominal wage rigidity w the cost of the shock for the workers will be $D(1-w)+[wen-w(1-n)]$, where the term in squared parenthesis is by hypothesis (a crucial one) a *positive* difference between the decrease in utility due to the sacrifice in employment (N^*-Q in Figure 1) and the increase in utility due to the higher real wage (OG in Figure 1). Again, with CBI, the shock will not be accommodated and the workers will incur no cost.

Consider now a positive real shock, increasing (by one unit) the long-run equilibrium level of the real wage (in Figure 1 the demand curve for labour would shift upwards crossing the supply in H). To adjust the latter, prices could be restrained. But to the extent that there is downward price rigidity (p , with: $0 \leq p \leq 1$) nominal wages will have to be increased, with a re-contracting cost equal to pr . With CBI the cost is r , like with $p=1$. Both with and without CBI the adjustment cost will be counterbalanced by the percentage increase in utility $(1-n)$ derived by the higher real wage.

The opposite, negative real shock, without the pegging of the prices by the central bank, immediately produces the new equilibrium level of real wages (OK in Figure 1) both through a reduction of nominal wages (if there is not complete downward rigidity) and/or through an acceleration of price increases. The resulting cost for the workers is $D(1-w)+(1-n)$ where the loss of utility due to the lower equilibrium real wage has been accounted for. With CBI all the adjustment falls on wages with a total cost equal to $D(1-w)+wen+(1-w)(1-n)$: the first term is the cost of partial downward re-contracting, the second term is the decrease in utility caused by the disequilibrium unemployment (N^*-Q in Figure 1) and the third term is the decrease in utility due to the lower real wage (OJ in Figure 1).

Table 8 summarizes the costs of all the types of shocks, with and without CBI. Let us first suppose that all the four types of shocks are equally probable. Then the expected total cost for the workers is higher without CBI by the amount $pr+D(1-w)$

times the probability of the shocks. The preference of workers for CBI increases with downward price rigidity and with the costs of re-contracting nominal wages, and decreases when downward nominal wage rigidity increases. In the recent years several factors have probably caused an increase in r : structural unemployment, international integration of the labour market and a lowering of the political power of the unions. There are also signs of a decrease of the downward rigidity of wages. These developments, according to the above model, would explain, particularly in certain European countries, an increasingly positive attitude of workers with respect to price stability and CBI. The behaviour of wages, far from contrasting the impact of CBI on inflation, could be thought as originating a "demand for CBI", as a cause of "endogeneity" of CBI. But this type of model can be looked at also from a different point of view. Suppose that the wage-setting mechanism is controlled by an oligarchic system of unions. Suppose also that the true social value of r and w are respectively higher and lower than the values of these parameters for the unions. Then a stronger CBI can be chosen by the general public on the basis of a "preferred agency" motive, i.e. as an element of a political action to correct the undesired results of the unions' behaviour.

When the different types of shocks have different probabilities other results can be obtained that square with more general theories and intuition. The preference for price targeting policies increases, for instance, when the probability of nominal shocks is higher than the probability of real shocks. On the contrary, accommodative monetary policies are preferred when real shocks are more probable: in particular, if nominal wages are very rigid downward, when there is a high probability of a negative real shock.

CBI and the adjustment of fiscal imbalances

Consider the relationship between CBI and the financing of the government deficit. In what follows the crucial aspect of CBI is that the independent central bank does not prevent the cost of public borrowing from fully reflecting the portfolio impact

of excessive indebtedness. On the contrary, it is possible to define a subservient monetary policy as a policy that tries to keep the interest rate on public bonds relatively independent of the government's borrowing requirement.

To help the discussion a very simple model can be useful. Let S be the stock of pre-existing public debt and F the current period's deficit net of interest costs, i.e. the so called "primary" deficit. Both S and F consist in one period public bonds floated each period. In each period a unique interest rate will be established on the market. Let R be one plus that interest rate. The total debt at the end of each period is:

$$D = RS + F \quad (1)$$

The interest rate increases with the amount of bonds floated:

$$R = 1 + ab(S + F) \quad , \quad b > 0, 0 \leq a \leq 1 \quad (2)$$

where b is the sensitivity of the interest rate to the borrowing requirement, while a is an index of central bank autonomy. With $a=0$ a subservient central bank will finance the Government with no interest cost; with $a=1$ a completely independent central bank will let the whole risk premium enter the cost of debt.

Apart from the structural parameter a , F is the only policy variable in the model. Its level is chosen by the fiscal authorities minimizing the following loss function:

$$L = \frac{1}{2} (D - h)^2 + \frac{1}{2} (F - f)^2 \quad (3)$$

where h and f are the preferred values of the debt and the primary deficit. While there is no well established theory behind the two parameters of this type of function, one can refer to the reasoning that has inspired the long run equilibrium fiscal parameters dictated by the Maastricht Treaty, and/or to the criteria that will characterize the coordination of national fiscal policies in the future EMU.

By substituting (2) into (1) and the latter into (3) and by setting to zero the total derivative of L with respect to F (checking the second derivative for a minimum), the optimal primary deficit F^* can be calculated:

$$F^* = \frac{f + (1 + abS)[h - S(1 + abS)]}{1 + (1 + abS)^2} \quad (4)$$

The derivative of this expression with respect to a is negative. Increasing CBI raises the cost of debt and, not surprisingly, causes a reduction of the deficit: exogenously imposed CBI acts in favour of fiscal discipline. A less obvious result can be obtained by substituting (4) into (3) calculating the minimum value of the loss L^* . Setting the derivative of L^* with respect to a equal to zero and looking for a minimum, the “endogenous” optimal degree of CBI can be derived:

$$a^* = \frac{(h - S) - f}{[(S + f)bS]} \quad (5)$$

It is easy to see that the corner solution $a^*=0$ will be chosen if the inherited level of debt S is too large compared with the target level h . But a^* can also turn out to be positive and tend to unity. The derivative of a^* with respect to f is negative: if there is a large enough target primary surplus ($f < 0$) a high degree of CBI will be chosen even if S exceeds h .

Among the exercises that can be made using (5) consider what happens if S is at its short run target level h , say the maximum Maastricht level equal to 60% of GDP. Suppose there is a target primary surplus equal to 3% of GDP (which implies a long run target lower than 60% for S). From (2) the term bS appears to have the dimension of a nominal interest rate, say 6%. With these hypothetical values the optimal degree of CBI, according to (5), would be $3/(57 \cdot 6\%) \cong 0.9$: the authorities would choose to grant nearly full independence to the central bank in order to maximize their welfare function. But is the target level h is too ambitious compared to the inherited S a

low level of CBI will be chosen. In a multi-period dynamic setting an adjustment path could be shown to exist where high CBI is compatible with the gradual approaching of h to its long-run desired (or Maastricht-imposed) value. This result seems instructive for an appropriate management of the coordinated convergence policies toward EMU.

Note that inflation and inflation surprises have been left out from this simple formulation of the model, to show how an "advantage of tying one's hands" can exist having no (direct and explicit) relation with the objective of price stability nor with the problems of time inconsistency and credibility.

5. The independence of the ECB.

It is generally agreed that "the European System of Central Banks is designed to have a high degree of independence" (Bank of Japan, 1995, p.40) also because "the statutes of the ECB are closely modelled on those of the Bundesbank, historically the most independent of all Central Banks" (Goodhart, 1994, p.3). It would therefore be superfluous to list here those aspects of the Maastricht Treaty that grant autonomy to the ECB. Consequently, the aim of this brief paragraph is merely to mention some of the problems that could hinder the independence, in spite of the basic rules through which it is guaranteed.

First of all there is the issue of *accountability*: no agency can be authentically autonomous without a precise definition of its accountability. "According to the statute this would be achieved by the ESCB reporting, ex post, to the European Parliament and the Council. Such ex post reporting, while taken seriously, generally leads to rationalizations of previous actions" (Goodhart, 1991, p.43). But to make the ECB seriously accountable to a controlling body, a more robust and mature institutional design of the EU's political profile is necessary. Otherwise "the ECB appears as a disproportionately powerful entity placed in a still vaguely defined and weak institutional setting, where its same power looks fragile" (Bruni, 1993, p.14). This means that to have a truly independent European monetary policy, progress must be made also on the fronts of the European political unification and institutional

reorganization. The 1996 Intergovernmental Conference is a crucial occasion to move in this direction. Only when the political and institutional background will be ready, several technical provisions could serve to enhance ESCB's accountability, including a more precise definition of the "primary objective to maintain price stability" (EU, 1992 Protocol, art.2), a system of sanctions, a transparent mechanism to arbitrate the possible conflicts with political controlling bodies and, if necessary, a well specified overriding clause. Before these delicate political and technical changes can happen, in the right way and in the right order, the importance of the accountability problem should not be exaggerated : the price stability rule, together with the other aspects of its autonomy and with the appointment of a credibly "conservative central banker" (à la Rogoff, 1985), will allow the ECB "to provide Europe with a beneficial, independent monetary policy, even before being sufficiently accountable" (Bruni, 1993, p.8).

The independence of an "supernational" bank has several dimensions. The ECB must not only show its independence of the national and the EU's governments: it must also be *independent of the Commission and of the NCBs* that hold its capital and, being "an integral part of the ESCB, shall act in accordance with the guidelines and instructions of the ECB" (EU, 1992 Protocol, art.14.3).

As far as the Commission is concerned the problem could be one of beaurocratic conflict: the Commission has important roles in monetary and financial affairs. It is a technical body, potentially competent to deal with the tasks entrusted to the ECB, but it has also a political profile. Its contacts with the Parliament and the Council are continuous and validated by a precise institutional relationship. The duties of the Commission probably need a clarification to exclude overlapping with the responsibilities delegated to the ECB. This is important for enabling the newly created agency to build its own reputation, not only in technical matters but also in matters of style and communication. Even if the EMI is not yet the ECB it is probably not too early to start favouring the birth of an atmosphere of conspicuous autonomy in monetary matters around the Institute. The recent publication of the Commission's

"Green Paper" on the introduction of the single currency (COM 1995) did not appear as a step in this direction. Certain articles of the Treaty do not help to clarify the respective roles and responsibilities. For example: "The Commission *and* the EMI shall report on the progress made in the fulfilment by the Member States of their obligations regarding the achievement of economic and monetary union" (EU 1992, art.109j). The collaboration of the Commission with the EMI and, later, the ECB, will be valuable and crucial in many important instances, like when exchange rate regimes and policies will have to be decided and managed: but a good collaboration can only result from well defined autonomies and specific responsibilities. The effectiveness of the actions of the European monetary agency depends on its credibility; national Governments and financial markets must, as soon as possible, start looking at this agency as an autonomous centre of thought and decision making, clearly distinct from the rest of the EU's bureaucracy which is often considered too abundant and intrusive.

The statute of the ECB has been organized in such a way as to favour the making of decisions in the "supernational interest". The votes in the Governing Council shall be weighted only for matters regarding the financial management of the Bank (EU 1992 Protocol, art.10.3). As regards monetary policy, the role of the Governors of the NCBs should not be to represent their national interests and form coalitions to this end, but to pursue the best for the EU. Still, the problem of avoiding centrifugal national pressures will certainly complicate the working of the ESCB. This problem will be more serious the larger are the differences between the statutes and the roles of the NCBs. From this point of view a big progress will be made when each NCB will fulfil the requirements of CBI. But, even after that, some dangers could come from the fact that several NCBs have other tasks besides monetary policy. These dangers are acknowledged by the statute of the ECB: "NCBs may perform functions other than those specified in this Statute unless the Governing Council finds, by a majority of two thirds of the votes cast, that these interfere with the objectives and tasks of the ESCB. Such functions shall be performed on the responsibility and liability of NCBs and shall

not be regarded as being part of the functions of the ESCB” (EU Protocol, 1992, art. 14.4). Among those functions the most delicate one is prudential policy.

The relation between CBI and *supervisory responsibilities* is an issue already dealt with in section 3 of this paper. As regards the independence of the ECB this issue has three connected aspects: i) the consequences of the fact that NCBs are involved in very different degrees and ways in national prudential policies; ii) the consequences of the lack of a European prudential policy; iii) the type of involvement the ECB should have in case a European prudential authority were to be established. An entire paper would be needed for a careful analysis of these three aspects. Suffice it to make some very short comments.

The introduction of a single currency seems to require, in compliance with the subsidiarity principle, some *centralization* of institutions, regulations and policies directed to maintain financial stability (Bruni, 1993). The Basle Committee’s work for *harmonization* is highly valuable but does not solve the problem without a central European agency taking explicit responsibility for prudential policies. As it stands, the text of the Maastricht Treaty makes it difficult for the ECB to be given a substantial role in this field: prudential tasks may be performed by the ECB (EU Protocol, art. 25.2) only after a decision of the Council following article 105.6 of the Treaty which requires unanimity and assent of the European Parliament: for national political or bureaucratic interests it will be easy to prevent centralization. The fact that the Treaty never uses the wording “lending of last resort” seems a bit of an hypocrisy, while article 3.3 of the Statute can be interpreted in the sense that this function is left to NCBs, with very serious problems of coordination. In addition, if coordination takes place in the interests of the whole ESCB, it is not clear how the costs of the lending must be allocated (Aglietta and Moutot, 1993, p.78): according to article 32.4 NCBs may be indemnified only in “exceptional circumstances”. The whole picture looks dangerously inadequate to cope with the difficult prudential problems and pressures for bailouts that will probably attack the European financial markets in the next decade. This could hurt the independence of the ECB.

A final note on the independence of the ECB must be devoted to the very specific and important issue of exchange rate management. In this matter the position envisaged for the ECB is stronger than in the case of most NCB, including the Bundesbank. To conclude formal agreements on an exchange rate system for the ECU in relation to non-Community currencies, and to adopt, adjust or abandon the central rates of the ECU within the exchange rate system, the Council will have to consult the ECB "in an endeavour to reach a consensus consistent with the objective of price stability" (EU 1992, art.109.1). "In the absence of an exchange rate system ... general orientations for exchange rate policies [formulated by the Council] shall be without prejudice to the primary objective of the ECB to maintain price stability" (EU 1992, art. 109.2). But, in spite of these provisions of the Treaty, the potential conflict between exchange rate policies and monetary stability remains unavoidable and only experience will tell how much the ECB will be able to stand out against exchange rate policies that could endanger price stability. In this field its reputation will be affected not only by the ECU/dollar and ECU/yen policies that will prevail but also, and perhaps sooner and more importantly, by the decisions that will be taken with respect to the "second speed" currencies of EU countries. This will be a crucial theme for understanding how soon and how much the ECB will be able to take up positions that are independent (though cooperative) of the pressures of the member states, of the political behaviour of the EU's Council, and of the opinions of the Commission.

6. Conclusions.

This paper has commented upon the institutional and legislative changes adopted in the EU to increase CBI. The conclusion is that much has been done but the reforms of the NCBs required by the Maastricht Treaty are still incomplete and there is much scope for further progress. Besides "legal" autonomy, three other dimensions of CBI independence should be carefully monitored in the EU in the next years, in spite of the fact that they are much more difficult to measure: *de facto* independence, the

reputation of independence and accountability. In due time they will all exert an influence on the feasibility and on the independence of the ECB. But CBI can also serve as a substitute for fixing the exchange rates and it is probable that, even if the European plan of monetary unification will fail, progress toward CBI will continue in the large majority of EU's countries.

An element that creates important institutional differences among EU's central banks is the degree of their involvement in prudential policies. In preparation of the EMU this subject should be discussed in an open and deep form, disregarding the bureaucratic interests that tend to keep the *status quo*. CBI requires a correct allocation of regulatory and supervisory responsibilities, which is also a condition for the effectiveness and the independence of prudential policies. Organizing an optimal institutional framework for supervision has become more difficult with the blurring of traditional boundaries between banks and the rest of the financial system. Probably, a multiplicity of prudential authorities are needed, with well defined goals, limited discretionality and clearly specified rules of behaviour.

The "question of endogeneity" of CBI has also been discussed, using theoretical arguments to illustrate some policy debates taking place in EU countries. Two macroeconomic decision processes have been considered that interact with CBI: the wage-setting mechanism and the adjustment of fiscal imbalances. The argument is made that, under certain conditions, both processes tend to favour CBI because it helps to reach their own objectives. In particular it is shown that, when the inherited stock of debt is not too large, fiscal authorities may like an autonomous central bank because it allows them to obtain a higher social and political utility, also independently of any time inconsistency or credibility problems. It is also shown that, if the cost of re-contracting nominal wages become sufficiently high, if there is downward price rigidity, and if the probability of short-run nominal macro shocks is sufficiently large with respect to the probability of shocks that change the equilibrium level of real wages, the workers prefer CBI to an accommodative monetary policy.

CBI is therefore, at least in part, “endogenous” and often there is no justification for giving up institutional monetary rigour on the ground that fiscal and incomes policies are an obstacle to disinflation.

A perfect independence of national central banks is a necessary but insufficient condition for the complete autonomy of the future ECB. Several issues regarding the independence of the ESCB have been discussed, including the problem of accountability, the potential centrifugal impact of excessively large differences between the non-monetary functions of the national central banks, the delicacy of the ECB’s task of developing a profile independent of the EU’s Commission while collaborating with its policies, the dangers coming from the lack of substantial prudential tasks of the ECB, the complex interaction between the independence of Europe’s monetary policy and the formulation of the Union’s exchange rate strategies toward the non-Community currencies as well as with the “second speed” EU currencies. The conclusion is that, while “on paper” the Maastricht Treaty grants a very strong autonomy to the ECB, it will not be easy to carry out a truly independent European monetary policy : this might even require some changes and integrations to the present design of the future monetary institutions of the EU.

Endnotes

¹ Suppose the utility function of the workers and the demand curve for labour are as follows:

$$U = N^n \left(\frac{W}{P}\right)^{1-n} \quad (1.1)$$

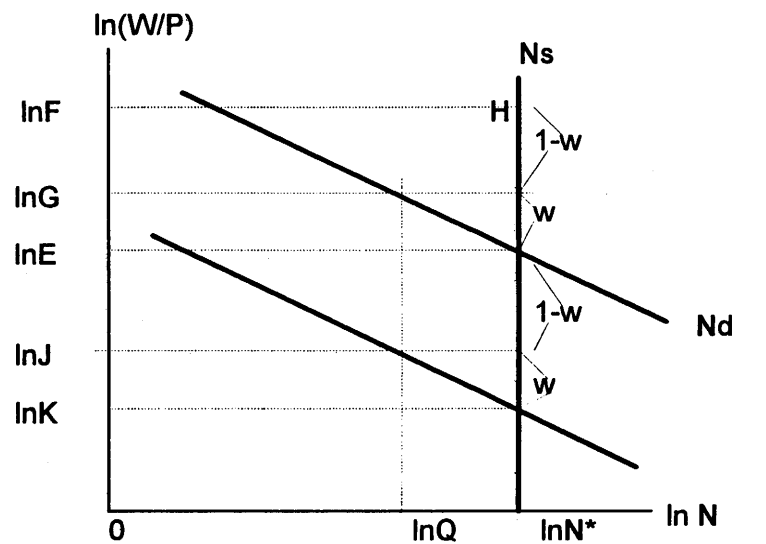
$$N = \pi \left(\frac{W}{P}\right)^{-\epsilon}, \quad 0 \leq N \leq N^* \quad (1.2)$$

where π is a scale parameter for productivity. By substituting (1.2) into (1.1) the derivative of the utility with respect to the real wage can be shown to be negative (with positive second derivative) if the employment variable has sufficient importance in the utility function, i.e. if $n > 1/(1+\epsilon)$. The supply curve will therefore be rigid at the full employment level N^* and the utility will decrease along the whole demand curve, going toward lower levels of employment and higher real wages.

² In a less descriptive and analytically better developed model the degree of wage rigidity would be in part endogenously derived also on the basis of the function D.

FIGURE 1

THE WAGE-SETTING MECHANISM



N_s is the supply of labour schedule; N_d the demand for labour. The horizontal axis measures the natural logarithm of employment N ; the vertical axis the natural logarithm of the real wage W/P . w is a parameter expressing the degree of nominal downward wage rigidity. The model explaining the Figure and its symbols is in section 4 of the text.

TABLE 1

**CONVERGENCE IN LEGAL REQUIREMENTS FOR
CENTRAL BANK INDEPENDENCE:
EU-12 averages**

<u>CRITERIA</u>	After the reforms of the period: 1991-95	Previously	Difference = Indicator of convergence
I Price stability as a statutory objective	0.54	0.29	+0.25
II Independence in the formulation of monetary policy	0.65	0.33	+0.32
III Prohibition to lend to the public sector	0.79	0.17	+0.62
IV Status of Governor	0.64	0.40	+0.24
total (average)	0.66	0.30	+0.36

NOTE: For each criterion the level of compliance is measured **between 0 and 1**. The total average is unweighted. The Table considers only the EU-12 countries. For the sources of information, other details and comments see section 2 of the text and Table 2.

TABLE 2
CONVERGENCE IN LEGAL REQUIREMENTS FOR
CENTRAL BANK INDEPENDENCE:
individual countries

<i>Country</i>	Ia	Ib	IIa	IIb	IIIa	IIIb	IVa	IVb	TOT (ave) a	TOT (ave) b	TOT (ave) a-b
Belgium	0.33	0	1	0	1	0	0.33	0	0.66	0	0.66
Denmark	0.5	0.5	0.66	0.66	0.66	0	0.33	0.33	0.54	0.37	0.17
Germany	0.83	0.83	0.83	0.83	1	0.5	0.66	0.66	0.83	0.71	0.12
Greece	0	0	0	0	1	0	0.5	0.5	0.37	0.12	0.25
Spain	1	0	1	0	1	0	1	0.17	1	0.04	0.96
France	1	0	1	0.5	1	0.5	1	0	1	0.25	0.75
Ireland	0.5	0.5	0.5	0.5	0	0	1	1	0.5	0.5	0
Italy	0	0	1	0.5	1	0	0.5	0.5	0.62	0.25	0.37
Luxemb.	1	0.66	1	0.5	1	0	1	0.33	1	0.37	0.63
Netherl.	0.66	0.66	0.5	0.5	1	0.66	0.33	0.33	0.62	0.54	0.08
Portugal	0.33	0.33	0	0	0.5	0	0.33	0.33	0.29	0.17	0.12
UK	0.33	0	0.33	0	0.33	0.33	0.66	0.66	0.42	0.25	0.17
<i>total</i> <i>(average)</i>	0.54	0.29	0.65	0.33	0.79	0.17	0.64	0.40	0.66	0.30	0.36
Austria									1		
Finland									0.5		
Sweden									0.2		
									0.64		

NOTE: Column titles refer to the criteria for independence of Table 1; the suffix "a" means "after the reforms 1991-95", the suffix "b" means "before the reforms": the last column can therefore be interpreted as an index of convergence to the required criteria. The main sources of information have been Table 6 in BOJ(1995) and EMI (1995). For each of the four criteria of independence a compliance index has been assigned (before and after the reforms) ranging from 0 to 1, where 1 indicates full *formal* compliance with the *legal* Maastricht requirements. Averages are unweighted. The pending reform in Luxembourg has been considered as enacted, while current reform projects in Greece, Ireland, The Netherlands, Portugal, Finland and Sweden have not been accounted for. The poorest and most uncertain set of information available to the author when compiling the Table was the one concerning the new three member countries.

TABLE 3

**CONCEPTUAL WEAKNESSES IN THE DEFINITION OF
THE LEGAL REQUIREMENTS FOR CENTRAL BANK
INDEPENDENCE**

(examples)

requirement I: STATUTORY INFLATION TARGET	requirement II: INDEPENDENCE IN THE FORMULATION OF MONETARY POLICY	requirement III: PROHIBITION OF LENDING TO GOVERNMENT	requirement IV: STATUS OF THE GOVERNOR
price level or inflation targeting ?	potential conflicts between monetary and exchange rate policies	indirect lending	political appointment nearly unavoidable
total or "domestically produced" inflation?	potential conflict between monetary and regulatory policies	highly implicit regulatory incentives to buy Government bonds	implicit political incentives for the post-Governorship career
which is the sufficient speed of convergence from a high inflation level?	no authority on the interest rate offered on Government bond issues	no authority on the differential tax treatment of Government bonds	difficulty in establishing sanctions for non- independent behaviour

CONJECTURAL ASSOCIATION OF COUNTRIES WITH THE SIX POSSIBLE ORDERINGS OF LEGAL (L), ACTUAL (A) AND REPUTED (R) CENTRAL BANK INDEPENDENCE

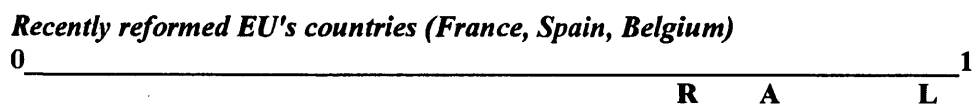
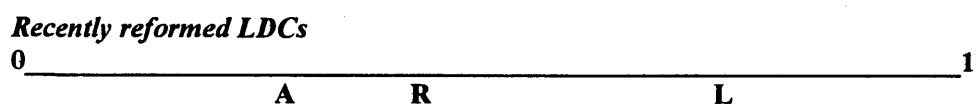
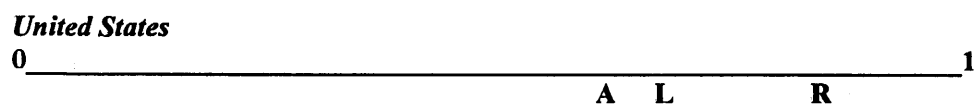
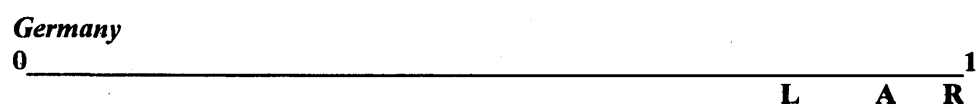


TABLE 5

**CENTRAL BANKS IN THE EU
WITH AND WITHOUT
PRUDENTIAL RESPONSIBILITIES**

***WITH SUPERVISORY AND
PRUDENTIAL POWERS***

Greece
Spain
Ireland
Italy
Luxembourg
The Netherlands
Portugal
United Kingdom

TOTAL NUMBER : 8

WITHOUT

Belgium
Denmark
Germany
France*
Austria
Finland
Sweden

TOTAL NUMBER: 7

* France is placed on the right side of the Table because: i) it exerts its supervisory functions only through the "Commission Bancaire" and ii) after the December 1993 reform monetary policy management is thoroughly separated from the other functions of the Banque de France.

Source: EMI (1995): Table 13 (point 5 of the third row, except for France).

TABLE 6

**INFLATION PERFORMANCE AND
INSTITUTIONAL SEPARATION BETWEEN SUPERVISORY
AND MONETARY AGENCIES**

	COUNTRIES WITH MONETARY AND SUPERVISORY FUNCTIONS <u>COMBINED</u>	COUNTRIES WITH MONETARY AND SUPERVISORY FUNCTIONS <u>SEPARATED</u>
INDUSTRIAL COUNTRIES: 1980-87	11.1	5.9
INDUSTRIAL COUNTRIES: 1980-91	9.5	5.3
ALL COUNTRIES: 1980-87	21.5	6.8
ALL COUNTRIES: 1980-91	48.4	7.1

Source: Goodhart and Shoenmaker, 1992, Appendix 2, Table 1.

TABLE 7

CENTRAL BANK INVOLVEMENT IN THE SUPERVISION AND REGULATION OF THE BANKING SYSTEM AND OF FINANCIAL MARKETS

(IN % OF THE MAXIMUM POSSIBLE INVOLVEMENT)

	considering only BANKS	<u>GLOBAL</u> <u>INVOLVEMENT</u> <u>INDEX</u> considering also non- bank intermediaries
United Kingdom	92	73
Greece	85	71
Italy	74	63
Spain	61	51
France	54	46
Sweden	42	42
Belgium	37	35
Germany	36	28
Japan	25	25

Source: Michelacci (1993), p.5. The indexes have been calculated on the basis of a detailed classification of types of controls (5 types of "structural" controls, 2 types of "liquidity" controls, 7 types of "prudential" controls, 2 types of interventions in banking crises, 2 types of "inspection" responsibilities), distinguishing between regulatory and executive powers. 2 points have been assigned for each control which is entrusted to the central bank, 1 point for each control shared by the central bank with other agencies, no points if the central bank is not in charge of the control. The involvement index is the ratio of the sum of points assigned to each central bank to the maximum possible number of points (i.e. 2 per type of control).

TABLE 8

**THE COST OF SHOCKS FOR THE WORKERS SETTING
THEIR WAGES**

	WITHOUT CBI	WITH CBI	COST ADVANTAGE OF CBI (1)-(2)
	(1)	(2)	(1)-(2)
nominal <u>upward</u> shock	r	0	r
nominal <u>downward</u> shock	$D(1-w)+wen-w(1-n)$	0	$D(1-w)+wen-w(1-n)$
real <u>upward</u> shock	$pr-(1-n)$	$r-(1-n)$	$-(1-p)r$
real <u>downward</u> shock	$D(1-w)+(1-n)$	$D(1-w)+wen+(1-w)(1-n)$	$-wen+w(1-n)$
		<i>total:</i>	$pr+D(1-w)$

Legends: see section 4 in the text.

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