SWEDISH ECONOMIC POLICY REVIEW 4 (1997) 9-50

The credibility problem: EMU and Swedish monetary policy

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Summary

Limited credibility increases chances for financial crises, raises employment costs for reducing and maintaining low-level inflation, raises the cost of capital to government, and generally reduces the allocative efficiency of capital markets. This paper surveys current knowledge about institutions that contribute to the maintenance of a stable, internal- and external-currency value and applies this knowledge to Sweden's current situation. Its basic premise is that Sweden's monetary policy should try to achieve and maintain price stability and high-level credibility: This paper discusses:

- Whether Sweden should join an EMU, if such a union is created, or whether Sweden should maintain price stability and credibility by other means.
- The costs of limited credibility and the relative merits of alternative credibility building institutions.
- Reasons for Sweden's past poor credibility record.
- Prospects for the formation of a monetary union.
- Alternative possible monetary institutional reforms.

Regardless of whether Sweden joins or does not join, Swedish policymakers should reform domestic monetary (and fiscal) institutions to enhance Sweden's commitment to price stability, follow Maastricht criteria to leave the option open to join a monetary union, and upgrade the legal independence of the *Riksbank*.

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The credibility problem: EMU and Swedish monetary policy

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Since the oil shocks of the 1970s, knowledge about the desirability of activist monetary policy changed dramatically. The notion that the economy's growth rate can be *permanently* raised by expansionary monetary policy was replaced by the view that, to the extent that a tradeoff exists between inflation and economic activity, the tradeoff is temporary.

Only unanticipated inflation has real effects. When inflation and monetary expansion are fully anticipated, an increase in the money supply (or equivalently, a lowering of short-term interest rates) only raises the price level without having an effect on employment. This *neutrality of money* view also applies to competitive devaluations. Such devaluations can affect employment and exports only as long as wages and prices have not fully adjusted to the new level of the nominal exchange rate. And even the staunchest Keynesians now recognize that without monetary expansion, persistent inflation is not possible. In parallel, a growing body of empirical work caused an upward revision in economists' evaluation of inflation costs.

These changing views, of what monetary policy can and cannot do, stimulated the emergence of a new consensus according to which monetary policy should be mostly used (and in some cases only) to achieve price stability. These views encouraged many countries to stabilize inflation and to upgrade the independence of their central banks while simultaneously charging the bank with the sole objective of maintaining price stability.[1]

It became important to convince the public that policy is seriously committed to achieving price stability. Because in the absence of such credibility on the part of the public, price-stability maintenance is accompanied by adverse effects on the economic-activity level. Recent

*I thank, without implicating, Lars Calmfors, Anders Forslund, Christina Nordh Berntsson, and Lars Svensson for useful suggestions and reactions. During early project stages, discussions with Harry Flam and Douglas Hibbs also helped me.

[1] Details appear in Cukierman (1996). In some cases, the commitment to stable prices (or the *anchor*) is implemented by fixed pegs rather than by central-bank independence.

evidence supports the view that a credibility building institution, such as central-bank independence, constitutes a *free lunch* because it reduces inflation and either does not affect long-term growth or even raises it (Grilli et al., 1991; Alesina and Summers, 1993; Cukierman et al., 1993).[2]

This paper surveys current knowledge about institutions that contribute to the maintenance of a stable, internal- and external-currency value. It applies this knowledge to the current situation in Sweden. Then it presents the basic premise that Sweden's monetary policy should be directed mostly, if not totally, toward this two-fold objective: achieving and maintaining price stability and a high level of credibility. After that, it addresses the question of how to achieve the objective. In particular, should Sweden join a European Monetary Union (EMU), if such a union is created? Or, should it try to maintain price stability and credibility by other means? This paper then addresses whether or not Sweden should join the EMU. It discusses: the costs of limited credibility and the relative merits of alternative credibility building institutions, some of the deeper reasons for Sweden's poor past credibility, and the prospects for the formation of a monetary union, and alternative possible reforms of monetary institutions (and evaluates them). The final section recommends a course of action, which considers: the need to boost credibility, uncertainty surrounding the formation of a monetary union and its precise structure, and the prospect for some resolution of this uncertainty in the future.

In the long run, credibility is determined mainly by the policy record. A long and sustained record of low inflation and of no devaluations builds the public's trust in currency stability. In contrast, mediocre performance, even if occasional, may undermine the credibility of monetary policy for an extended time period. The establishment of credibility for nominal stability is not without cost, because it limits the ability of monetary policy to attain other objectives, such as a high level of employment or vigorous exports.

Policy choices are obviously shaped by the political process but also depend on the structure of monetary institutions. They affect the tradeoffs between price stability and credibility and the importance of other possible objectives of monetary policy.

[2] There is also increasing evidence that, *ceteris paribus*, inflation and growth are negatively related (Fischer, 1991).

An absolutely low level of credibility induces high, real interest rates and raises the credibility costs of using monetary policy for anti-cyclical purposes. But, given the absolute level, relative credibility also matters. Sweden's credibility record has been low or mediocre compared to that of many other industrial economies. Since the commitment of Sweden's major trading partners to price stability has recently increased, this credibility discrepancy became even more pronounced during the last decade. This relative credibility gap is the root cause of the 1992 exchange-rate crisis. The credibility gap makes it difficult to use the exchange rate as a nominal anchor, and the gap is largely responsible for the interest rate differential between Sweden and other, more stable, European economies.

1. The costs of limited credibility and of opaque policy procedures

Limited credibility means that unions, investors in the capital market and the general public are relatively skeptical about the commitment of policymakers to price stability. As a consequence, when in spite of those suspicions, monetary policy is geared mainly to achieve price stability; realized inflation is lower than expected inflation. This has several adverse consequences.

First, *ex post* real interest rates are higher than *ex ante* rates, which increase the possibility of financial crises.

Second, given nominal wage contracts, *ex post* real wages are higher than expected, which reduces employment, economic activity, and the external competitiveness of the country.

Third, in the presence of limited credibility, nominal devaluations have a shorter and more limited beneficial effect on the balance of payments, because they are translated relatively quickly into domestic price increases. Thus, in the presence of limited credibility, policies that are geared towards price stability induce adverse real developments in various areas of the economy.

In addition, if the policy process is opaque, the public's uncertainty regarding nominal stability is larger. As a consequence, both private borrowers and government must pay larger risk *premia*, which also make *ex ante* real interest rates higher. This discourages investment, increases the cost of financing to the public sector, and generally reduces the allocative efficiency of the capital market.

One of the main political difficulties in stabilizing an ongoing inflationary process is due to the fact that unexpected inflation is negative for a while after the stabilization of inflation. The poorer the credibility of policymakers' commitment to price stability, the lower actual inflation is, compared to expected inflation in the immediate aftermath of stabilization and the larger the above mentioned adverse effects.

Limited credibility induces a secondary adverse effect. When serious questions arise about the commitment to price stability, even dependable policymakers, who intend to stick to pre-announced targets, produce high inflation. That is because given the public's suspicions, they find it optimal not to be too ambitious about price stability. But, unlike undependable policymakers, dependable policymakers compromise on the price stability objective by announcing and delivering higher inflation rates than in the case in which their dependability is known by the public with certainty.[3]

1.1. The costs of limited relative credibility

Public skepticism about the commitment of domestic policymakers to price stability causes larger costs for the home country—the stronger the commitment of policymakers in other countries to price stability. Even if the level of credibility in a country is high by some absolute standard, the country may suffer non-trivial costs if this level is low compared to the norm of its main trading partners in real and financial markets. I refer to these costs as *costs of limited, relative credibility.*

One reason for the existence of such costs is that little relative credibility makes it difficult to use the exchange rate as a nominal anchor because it leads to recurrent exchange-rate crises, high real-interest rates and stop-and-go policies with associated uncertainties due to recurrent half-baked attempts to achieve nominal stability. These costs of limited relative credibility are likely to be higher the more open the economy and the freer capital flows are. Obviously, they can be reduced by letting the exchange-rate float. But a floating exchange-rate regime has its own problems. In particular, the variability of relative prices between home goods and foreign goods is substantially higher under flexible rates than under fixed pegs (Mussa, 1986). It is also likely that the level of uncertainty faced by exporters

[3] A fuller characterization of this phenomenon appears in chapter 16.2 of Cukierman (1992) and in Cukierman and Liviatan (1991).

is higher under flexible rates. The quantitative impact of those considerations is higher in small, open economies.

The previous considerations are particularly relevant for Sweden for two reasons:

1. Sweden has a small, open economy for which an exchange-rate target, perhaps combined with an inflation target, is relatively attractive. An exchange-rate target has several desirable features. It is easy to control (provided monetary policy is subjugated to the achievement of the target), it is highly visible to the public, observable at short intervals, and for small open economies, strongly correlated with the final objective of price stability.[4]
2. The current commitment of Sweden's main trading partners to price stability is stronger than a decade or so ago and is likely to remain strong in the future. Thus, strengthening of the commitment to price stability in Sweden is desirable if only because its main trading partners have upgraded their commitment to this objective during the last decade.

1.2. Stabilization policy and the cost of opaque policy procedures

Opaque policy procedures increase the public's uncertainty about the determination of policymakers to achieve price stability. As stressed by Meltzer (1995) monetary policy in most countries is not fully committed to price stability, nor is it totally discretionary. But in many countries, including Sweden, the degree of commitment fluctuates over time, so it is not known with certainty by unions, participants in financial markets, and the general public. As a consequence, when policymakers in such countries engage in stabilization policy, the public rationally attributes part of the associated fluctuations in inflation and in money growth to the need to stabilize the economy and changes in the commitment of policy to price stability.

The larger the public's uncertainty is about the degree of commitment to price stability the larger the effect of changes in the inflation rate on the credibility of this commitment. That is because (given the variance of the real shocks to be stabilized) when there is a lot of uncertainty about the strength of this commitment, it is more likely

[4] A fuller comparison of exchange-rate targets, monetary targets, and inflation targets appears in Cukierman (1995b). A summary of the recent Swedish experience with inflation targets appears in Svensson (1995a).

that a given change in the inflation rate is due to changes in the commitment than to an attempt to stabilize real shocks to the economy. The structure of institutions in charge of monetary policy determines the level of uncertainty about the commitment to price stability.

I refer to monetary institutions that clearly reveal the degree of commitment to the public as *transparent* and to those that do not as *opaque* or less transparent.[5]

An important consequence of the preceding observations is that, with transparent monetary institutions, counter-cyclical policy has a smaller impact on credibility than is the case under more opaque monetary institutions. The appendix illustrates this result within a precise, analytical framework. In this framework *credibility* has a very precise meaning.[6] It refers to the public's rational belief about the seriousness of commitment to a socially optimal rule that eliminates any systematic inflationary biases while retaining the option to stabilize shocks to the natural level of employment.[7]

This general principle can be illustrated with a concrete example. Suppose that some real shocks temporarily reduce the natural level of employment below its mean value and that, since monetary policy is counter-cyclical, this causes an increase in the inflation rate. Consider now two countries with the *same* shocks and with *identical* policy responses but with different transparencies of monetary institutions. Inflationary expectations in both countries will go up and both will suffer some credibility loss. But this loss will be smaller in the country with more transparent monetary institutions.

The other side of the coin is that when natural employment is above trend and therefore, inflation is relatively low, the country with more opaque institutions will gain more credibility. But, from a long-term viewpoint, it seems preferable to divorce stabilization policy from the credibility of monetary policy as much as possible. Under reasonable assumptions the gains from the higher credibility in the second case are unlikely to fully compensate the losses from dimin-

[5] Note that the degree of commitment may be either high or low. The issue of transparency concerns the extent to which the public has accurate information about the degree of commitment.

[6] In general, *credibility* is a multi-faceted term. A general discussion of some of its aspects appears in chapter 11 of Cukierman (1992).

[7] Such rules are discussed by Walsh (1995), Persson and Tabellini (1993) and within the context of inflation targets, by Svensson (1995b).

ished credibility in the first case.[8] It follows that, provided cyclical fluctuations are symmetric *ex ante*, policy opaqueness is costly to the economy.

2. The relative merits of alternative credibility building institutions

This section discusses and compares alternative institutional devices for the establishment of credibility with particular emphasis on central-bank independence (CBI) and on various degrees of commitment to a fixed exchange rate. In general, credibility depends on the institutions of the entire political system, fiscal policy, and the structure of shocks. But appropriate monetary institutions can contribute to the buildup of credibility.

2.1. The theoretical case for pre-commitment of monetary policy

The theoretical case for pre-commitment of monetary policy to the achievement of price stability, even at the cost of sacrificing other objectives, rests on the notion that, even if they act as social planners, monetary policymakers follow policies that result in excessive inflation relative to what is socially optimal.

The difference between the resulting inflation and its (lower) socially optimal level is known as an *inflation bias* in academic literature. This bias can be eliminated by committing monetary policy to achieve low inflation *before* various nominal contracts in labor and capital markets are concluded. The bias arises because besides price stability, policymakers are interested in achieving various real objectives, such as high employment, financing of the budget, financial stability, and international competitiveness. These various motives imply that, given the inflation rate, policymakers like positive inflationary surprises. Because individuals in the economy are aware of those temptations, they expect a positive inflation rate and demand positive premiums in nominal wage (and other) contracts to compensate them in advance for the inflationary tendencies of policymakers. This leads to an equilibrium in which the real effects of unanticipated inflation are nullified. But the inflation rate is excessive. Because inflation rates

[8] The basic assumption is that the marginal costs of deviations from *desired* levels of employment and of inflation rise with the size of these deviations. This is the case, for example, with quadratic welfare functions.

in all countries are positive most of the time, this mechanism is consistent with casual observations.[9]

Commitment mechanisms differ across countries regarding their general structure and the degree of insistence on abiding by the commitment. Three main types of commitment mechanisms are:

1. The delegation of authority to an independent central bank (CB) that is instructed to focus on attaining price stability (this has recently gained popularity). With this commitment mechanism, credibility largely depends on domestic institutions and in particular, on the independence of the CB. The *Bundesbank* is a leading example of commitment by means of CBI.
2. Pre-commitment via pegging of the exchange rate or in some extreme versions of this type of commitment, complete abdication of domestic money in favor of some stable external currency. The Bretton-Woods system, the more recent European Exchange Rate Mechanism (ERM), and the current Argentinean currency board are examples.[10] Panama is one example of the more extreme case of full *dollarization* in which there is no domestic money. Instead, a foreign currency is used. In the potential European Monetary Union (EMU) as envisaged in the Maastricht Treaty, individual countries also give up the option to issue a domestic currency. Under fixed pegs or full dollarization, credibility is *imported* from abroad.
3. Price stability is achieved even with a dependent CB and a flexible exchange rate because public officials in the ministry of finance, who are in charge of monetary policy, take a relatively conservative stance regarding price stability (in some countries, such as Japan). Some countries fortify their commitment to price stability by maintaining fixed pegs and by having legally independent central banks. Examples are Austria, The Netherlands, and Argentina—since the convertibility plan of 1991.

[9] The mechanism was first pointed out by Kydland and Prescott (1977) and elaborated by Barro and Gordon (1983) in the context of the employment motive. Chapter 2 of Cukierman (1992) contains an intuitive discussion of the ways in which the various objectives in the text undermine credibility by leading to an inflationary bias.

[10] Under a currency board domestic currency is issued (or retired) only when foreign exchange reserves are sold to (or bought from) the currency board at a fixed price. This implies that the money supply cannot be increased through domestic credit creation.

2.2. Evidence on inflation, accommodation, and CBI

By now, a substantial amount of evidence exists, which supports the view that in developed economies, inflation is lower—the higher the degree of legal independence of the CB (Grilli et al, 1991; Cukierman, 1992; Alesina and Summers, 1993; Eijffinger and Schaling, 1993). And for this group of countries, there is no relationship between long-term growth and CBI so that CBI appears to offer a *free lunch* because it reduces average inflation without affecting growth (Grilli et al.,1991; Cukierman et al., 1993).

Recent work (Cukierman et al.,1996) also suggests that, given the type of exchange-rate regime, monetary accommodation of wage inflation is lower in countries with more legally independent central banks. The tendency to accommodate is often positively related to the political vulnerability of the CB (measured as the fraction of political transitions that are followed, within six months, by a replacement of the CB governor).[11]

2.3. Which features of legal independence?

The previous evidence suggests that central bank autonomy is positively correlated with stable and credible policies. Correlation does not necessarily imply causality. Both inflation and CBI can be related to some more fundamental factors, such as the public's inflation aversion. But there is a strong presumption that a substantial part of the correlation reflects causality from CBI to low inflation.[12] Given this premise, an important question is how to assure independence in practice. An obvious first step is to make the CB legally independent. Legal independence does not always assure actual independence (see chapter 19, Cukierman, 1992). Although not sufficient for actual independence, legal independence is necessary for actual independence.

In view of present evidence, what are the most important, credibility enhancing, attributes of legal independence? There is no full

[11] A *political transition* refers to any of these:
1. A change in regime from democratic to authoritarian or vice versa.
2. A replacement of one government by another in a democracy without a regime change.
3. A replacement of one authoritarian leader by another within an authoritarian regime.
4. A replacement of a head of state without a change of government or of regime.
See Cukierman and Webb (1995) for more details.

[12] See Cukierman (1992, pp. 427-430) for evidence that supports this view.

answer to this question but there is enough accumulated evidence to support these tentative conclusions:

1. The objectives of the CB should be clearly defined in the law with primary emphasis on price stability.
2. The final authority over monetary policy should be given to the bank. Practically this means that the bank should be allowed full technical control over at least some nominal aggregate, which could (but does not necessarily have to) be the monetary base. A byproduct of this recommendation is that the bank should have full control over short-term, nominal, interest rates.
3. There should be clear and strict limitations on lending to government and to other public and private institutions.
4. Appointment procedures should shield the high officials of the bank from potential political pressures. In particular, their terms of office should be divorced from those of government.

Many politicians either do not understand the *inflationary bias* result or choose to ignore it, because of the short-term benefits of unanticipated monetary expansion. In view of this, the institutional safeguards provided by legal, central-bank autonomy are particularly important. Although they cannot be expected to deliver full credibility by themselves, those safeguards appear to be important components within a fuller system of credibility enhancing measures.

2.4. Commitment by means of an exchange-rate rule

The main advantage of an exchange-rate rule is that, if strictly adhered to, it preserves relative credibility. Together with its other advantages, such as high visibility and a high correlation with the price level, an exchange-rate rule appears to be highly desirable for small, open economies such as Sweden. An obvious cost of an exchange-rate rule is that necessary adjustments in the real exchange rate must occur via relatively sluggish changes in domestic prices and wages—rather than via the swifter changes in the nominal exchange rate. The implicit presumption underlying this view is that required changes in the real exchange rate can be obtained more quickly by means of changes in the nominal exchange rate than by means of changes in domestic (nominal) prices and wages. Two ways to avoid this cost are to:

1. Give up the exchange rate as a nominal anchor and have a fully flexible exchange rate.

2. Peg the exchange rate but also let policymakers adjust the peg under sufficiently extreme circumstances.

This *adjustable-peg* solution appears as a reasonable compromise provided policymakers are sufficiently knowledgeable about the circumstances under which realignments are desirable. But even if that is the case, adjustable pegs may not be a panacea. Accumulated experience with nominal devaluations suggests that the more devaluations are used to stimulate exports and economic activity, the faster the pace at which their real effects are dissipated through price increases. In isolated, appropriate circumstances, a realignment can achieve a lot regarding exports and employment. Examples are Italy during 1992-93 and Sweden during 1977-85. But it is doubtful that deliberate nominal realignments can be relied on to permanently stimulate exports and employment. In looking to the future, if the EMU with irrevocably fixed parities will exist, its members are likely to be less tolerant of competitive devaluations than they were before. So the costs of giving up the nominal exchange rate as a device for achieving swift adjustment of relative prices may not be as substantial as some policymakers in Sweden believe (except under exceptionally large and persistent specific shocks).[13]

This brings me to the question of the optimal degree of commitment to an exchange-rate rule. By choosing the institutions that implement the rule, policymakers affect their cost of reneging on the rule and therefore the strength of commitment. The larger the cost of reneging on the rule, the narrower the set of circumstances under which policymakers will decide to abandon the rule. So the commitment's tightness is greater when the cost of reneging on it is larger. For example, a unilateral declaration by a relatively dependent CB that it will maintain a fixed peg is a weaker commitment than a similar declaration by its political masters and the bank. A currency board that is implemented through the constitution, as under the 1991 Argentinean Convertibility plan, is a stronger commitment than such a declaration. The reason? Because a change in the constitution requires a privileged majority, it is more difficult to abandon the rule in this case than in the case in which the decision is up to the more narrowly focused executive branch of government. And full replacement

[13] See Svensson (1994) for a more detailed discussion of the lessons from recent realignments in Sweden and other Nordic and EC countries.

of the domestic currency by a foreign one, as in Panama, is likely to represent an even stronger commitment.

What is the optimal degree of commitment to an exchange-rate rule? The general answer is that normally, it is at some intermediate value between full discretion and an irrevocable commitment and that the precise degree depends on the variance of real shocks, the reputation of policymakers, and the inflationary bias of policy under discretion.

Systematic analysis implies that policymakers with better reputations will opt for a tighter commitment. The intuitive reason is that the employment costs of abiding by the commitment are lower when reputation is better because inflationary expectations and therefore nominal wages are lower in this case.[14]

There is not much empirical evidence on the relation between the type of exchange-rate regime and inflation. Existing evidence for a sample of 44 developing countries shows that the fraction of low inflation countries is lower in countries with fixed pegs than in countries with flexible rates (Anyadike-Danes, 1995, Table 1). Evidence for industrial economies suggests that the degree of accommodation of wage inflation differs between countries with unilateral pegs, on one hand, and countries with flexible rates or cooperative pegs on the other. In particular, the tendency to accommodate is smaller in the first group of countries. But there is no discernible difference in this tendency between countries with cooperative pegs and countries with flexible rates (Cukierman et al., 1996).

2.5. Inflation targets

During the early 1990s, many countries, including Sweden, introduced inflation targets. To the extent that policymakers are sanctioned when targets are missed, inflation targets can also be used as a commitment device. But in most of the countries that have recently used such targets, there are no explicit sanctions so that the implied commitment to price stability is limited.

A notable exception is New Zealand in which the governor of the CB enjoys a high degree of instrument independence and can be fired if she or he does not live up to the target. In other cases, such as the UK and Sweden, the degree of commitment to price stability embodied in the target is probably low and definitely opaque.

[14] Details in Cukierman (1994).

When backed by serious and visible sanctions, inflation targets have several desirable features. They are focused on the final objective of monetary policy. This is particularly important when the relation between money and prices is relatively unstable. As is the case with exchange-rate targets, inflation targets are relatively visible. But policymakers do not have perfect control over the inflation rate. As a consequence the process of building credibility may be slower under an inflation target than with a target that is fully under the control of policymakers, such as the monetary base.[15]

A drawback of inflation targets is that they make it easier to exert expansionary pressures on the CB to (temporarily) reduce interest rates and achieve various real objectives. Such pressures are particularly likely to materialize in periods in which the inflation target is attained. This problem is compounded when there is a change in the inflation rate—neither the public nor policymakers know with certainty whether the change is persistent or transitory. Data on the inflation rate is usually monthly. When the monthly inflation rate goes down, there is an immediate tendency to proclaim victory over inflation and to release the monetary brakes to reduce interest rates and achieve related, real objectives. But when the monthly inflation rate goes up, there is a tendency to wait and see if the change is really persistent—before applying the monetary brakes. This asymmetric response of policy compounds the inflationary bias of monetary policy. Countries with relatively dependent central banks, with no clear mandate to focus on price stability, are likely to be particularly susceptible to such problems.[16]

2.6. EMU as an exchange-rate rule

The EMU, if and when it exists, is a form of commitment to a given level of price stability by means of a central monetary policy and *irrevocably* fixed exchange rates among countries in the union. For Sweden, joining such a union means that Sweden's policymakers *largely*

[15] Details in Cukierman (1995c).

[16] In the absence of the persistent-transitory confusion, the bias is likely to be smaller because with full certainty about the persistence of shocks, it is harder for advocates of expansionary monetary policy to press their case. A fuller discussion of the comparative merits of inflation targets appears in Cukierman (1995b). A summary of the recent experience with such targets in six European countries appears in Leiderman and Svensson (1995).

relinquish the use of monetary and exchange-rate policy to stabilize country-specific disturbances.

I highlighted the word *largely* because joining the union does not necessarily imply that the cost of leaving the union is larger than the cost of staying in *for all possible future contingencies.*

In the presence of very large and persistent country specific shocks that cannot be effectively stabilized by other policy instruments, Sweden may find it worthwhile to renege on the rule and leave the Union. The ease with which Slovakia created its own currency after it separated from the Czech Republic suggests that, although the costs of recreating a domestic currency may not be negligible, they are not prohibitive under all circumstances. If the probability of such events is non-negligible, it is likely that joining the union is not a good idea. But if it is relatively small, joining may be the best course of action.

The fundamental sharper question lurking behind those considerations is: what is the optimal degree of commitment to price stability for Sweden? Is the strength of commitment embodied in joining the union nearer or further away from this optimal level than the level of commitment achievable by politically feasible reforms in the structure of domestic monetary institutions without joining the union? The answer to this question hinges on the comparative costs of reneging on the commitment to price stability in the two cases.

An important consideration in this context is the ability of Sweden's policymakers to control those costs and to estimate them with a reasonable degree of accuracy. It seems that the ability of Sweden's policymakers to control the costs of reneging or even to estimate them with a reasonable degree of accuracy is lower in the case in which Sweden joins than in the case in which it does not join and restructures domestic institutions. That is because the costs to Sweden for leaving the union, given that it has joined, depend on future realizations of currently, highly uncertain factors, such as the number and the identity of countries in the union and the precise legal and institutional structure underlying it.[17]

[17] This statement presumes that the final structure of the monetary union will not necessarily be identical to the one envisaged by the drafters of the Maastricht Treaty.

2.7. Indexation of government debt as a credibility enhancing device

One obvious, direct benefit of inflation is that it reduces the burden of the public debt by inflating away some of the real value of the principal and the interest on the national debt. This benefit is larger per unit of inflation—the larger the national debt. So if other things remain the same, the inflationary temptations of policymakers are larger—the larger the public debt as a fraction of GDP. It has been suggested that by issuing a larger fraction of its debt in foreign exchange or by indexing it to domestic inflation, the Swedish government can reduce those temptations and improve its credibility (Lindbeck Commission, 1994, p. 47).

Although logical and realistic, this argument disregards the possibility that there is also an effect in the opposite direction. When a large part of the debt is indexed, the opposition to inflation, by holders of this debt, such as pension funds and insurance companies, is smaller.[18] This reduces the size of the constituency that is interested in price stability, and *ceteris paribus* makes it easier for politicians to raise the money supply to achieve other real objectives, such as employment. The outcome is that, without more precise quantitative assessments of the relative magnitudes of these conflicting effects, it is hard to judge if indexing of the debt will or will not improve credibility. The Israeli experience with financial assets linked to the price of foreign exchange suggests that, at least during the period of high inflation, indexing of the debt does not improve credibility.

3. Sweden's credibility record

This section takes a broad look at Sweden's credibility record during the last two decades and tries to identify some reasons for its relatively low level of credibility. During most of this century, Sweden had a fixed exchange rate with occasional realignments. Between the mid 1970s and the early 1980s, Sweden devalued five times to stimulate growth and exports and to improve the balance of payments. At the time of the first oil shock, Sweden was a member of the *Snake*,

[18] For example, in the US, one of the strongest anti-inflation constituencies is composed of retirees or individuals who are close to retirement—because a large fraction of their savings is in non-indexed, financial assets. Had those assets been indexed, their opposition to inflation would have been smaller.

which implies a fixed exchange rate against the German mark. The Swedish crown was devalued by 3 percent in October 1976, by 6 percent in April 1977, and by 10 percent in August 1977—when Sweden left the Snake. The crown was subsequently pegged unilaterally to a basket of the 15 most-important currencies in Swedish foreign trade. A fourth realignment of 10 percent occurred in September 1981.
The basic reason for those realignments was the relatively more expansionary Swedish aggregate-demand policies that created a positive inflation differential between Sweden and most of its trading partners. The combination of fixed pegs and persistent inflation differentials created rampant real appreciations that produced current-account deficits, which ultimately caused policymakers to correct the real appreciations with nominal devaluations.

The crown was devalued again by 16 percent in October 1982 under the new social democratic government—largely to stimulate the tradable sector. Subsequently, the inflation differential, although still positive, narrowed, and there were no further realignments during the 1980s. From the end of 1989, the crown suffered many speculative attacks without any realignment. The last speculative attack in November 1992 forced the *Riksbank* to abandon the peg and let the crown float. This led to a large depreciation. Several factors caused the last episode:

- A substantial real appreciation since 1982.
- Concerns about the soaring government budget deficit.
- The international exchange-rate turmoil in the wake of German unification.[19]

Sweden's devaluations have had non-negligible temporary beneficial effects on economic activity and exports. But they also tarnished the credibility of Sweden's commitment to price stability and most likely fueled or re-enforced the suspicions that led to recurrent attacks on the crown during the early 1990s. Average inflation was invariably high compared to inflation in some of the major countries that are prime candidates for forming a monetary union, such as Germany, France, the Benelux countries, and Austria. These observations support the view that Sweden's inflationary bias is larger than that of those countries.

[19] A related discussion appears in Svensson (1994).

3.1. Why is Sweden's credibility relatively low?

Sweden's poor credibility is a direct consequence of its relatively large inflationary bias. Theoretical considerations suggest that the bias is larger the higher the real-wage cost of employers, relative to productivity. The reason is that the higher the labor cost, the lower employment is and therefore, the stronger the temptation of policymakers to remedy this situation by means of inflationary surprises. But unions and the public anticipate this and demand higher nominal wage increases thus neutralizing the effects of the more expansionary monetary policy on employment.

So the outcome is that (given productivity) the higher the real wage, the higher the inflation rate. The real wage is higher, in turn, the stronger the power of unions and the larger their concern for real wages in comparison to employment. To the extent that a higher tax wedge induces higher wage costs to employers, the bias is also larger—the larger the wedge.[20]

Generous unemployment benefits is another factor that is likely to have contributed to a high real wage—relative to productivity and thus to a strong inflationary bias. Swedish labor legislation, which provides a high level of job security, shields the currently employed from the risk of unemployment due to real wages that are above the market-clearing levels.[21] As a consequence, unions ask for higher real-wage rates than they would have asked for at lower levels of job security. This puts more of the burden of providing demand for the services of the unemployed on aggregate demand policies and on monetary policy in particular, which makes the inflationary bias higher.

Between the early 1960s and the early 1980s, centralized *solidarity* bargaining dramatically reduced wage dispersion. This process was reversed with the breakdown of centralized wage negotiations in 1983 (Hibbs and Locking, 1995). An open issue in this context concerns the effect of the degree of centralization of the wage bargaining process on the inflationary bias. The Lindbeck Commission (1994, p. 37) advocates more decentralization of wage bargaining. Although there may be several advantages to such a structure it may have a cost regarding credibility.

[20] This statement is conditional because there is some question as to whether the tax wedge affects wage costs in the long run (Calmfors, 1994)).

[21] This is one aspect of the *insider-outsider* theory of the labor market developed in Lindbeck and Snower (1988).

This occurs via two channels:

1. A large *conglomerate union* is more likely to internalize the effects of inflation on the economy when it bargains with government or other employers' associations—compared to many smaller unions that largely ignore the effects of their own actions on the aggregate economy. Centralization of bargaining on the side of employers has similar effects.
2. A large union is also more likely to internalize the adverse effects of higher wages on employment which, in view of the previous discussion, tends to reduce the inflationary bias. Evidence in Layard et al. (1991) supports the view that large unions are more concerned with the employment consequences of their wage policies.[22]

In summary, the reduction in the degree of centralization of wage negotiations since the early 1980s seems to support the view that one of the moderating forces that affects the level of real wages is currently weaker than in the past, and so the potential inflationary bias is larger.

3.2. The benefits of a more independent *Riksbank*

Although some minor reforms aimed at raising the legal independence of the CB were undertaken at the end of the 1980s, the *Riksbank* still appears to be relatively dependent among the central banks of industrial economies. Those reforms, which are embodied in the 1988 *Riksbank* act, raised the term of office of the governor from three to five years. Before that time the terms of office of the governor of the CB and of government often coincided. As a matter of fact, during the 1970s and 1980s, the *Riksbank* emerges as the most politically vulnerable CB within the group of developed economies (Cukierman

[22] But Calmfors and Driffill (1988) present a theory and some evidence suggesting that there is an inverted U relation between the average level of real wages and the degree of centralization of wage bargaining. The curve rises initially because, as centralization increases, the restraining effect of competition on wages decreases. But at sufficiently high levels of centralization, the moderating effect on wages of internalization by unions of the effects of high wages on employment dominates. An important unanswered question in this context is where Sweden currently finds itself along this curve. Freeman (1988) finds a related, non-linear relation between employment growth and wage dispersion. Calmfors (1993) is a more recent reference.

and Webb, 1995, table A1).[23] The 1988 act partially corrects this extreme dependence on political authorities. The independence of the *Riksbank* was raised further by prohibiting government from monetizing budget deficits by borrowing at the CB. But there is still no prohibition on the appointment of members of Parliament to the CB board and on firing CB board members by Parliament for policy reasons. This, with the fact that the governor may be fired by the board, limits the independence of the *Riksbank*.

The *Riksbank* currently controls the repo rate, the overnight lending rate and, in contrast to many other central banks, it also determines the exchange-rate regime and exchange-rate policy. So it appears that the *Riksbank* currently enjoys a substantial degree of *instrument independence*. But this independence may be largely illusory in view of the habit to appoint members of Parliament to the CB board. In addition, the CB law does not charge it with the task of maintaining price stability. So despite some recent progress, the *Riksbank* should be viewed as still being quite dependent.

This state of affairs, with the Swedish record of depreciations during the last 20 years, undermine absolute and relative, long-term credibility. In view of recent, relatively more substantial reforms in CB laws in many other countries (Cukierman, 1996), the second effect is currently of particular importance. This discrepancy in CBI between Sweden and a growing number of other countries is one of the reasons for speculative attacks on the crown during the early 1990s and is likely to continue to cause speculative attacks if Sweden decides to go back to a peg or to a narrow exchange-rate band.

Upgrading the independence of the CB is a good idea for another reason. In general, the benefit of committing monetary policy to price stability is higher—the larger the inflationary bias of policy under discretion (Cukierman, 1994). The reason is that the credibility gain caused by the commitment is larger when the inflationary bias is larger. So credibility is lower at the outset. Because the Swedish inflationary bias is relatively large, the potential benefits from a stronger commitment, by means of CBI or through some other mechanism, is likely to be non-negligible.

[23] The political vulnerability of the CB is measured as the fraction of political transitions that is followed, within six months, by a replacement of the CB governor (see footnote 11). Between 1972 and 1989, there were four changes of CB governor in Sweden. Two (in November 1976 and November 1979) occurred within less than six months of a preceding political transition.

4. The prospects for EMU: timing, scope, and structure[24]

The final recommendation regarding whether Sweden should or should not join the EMU hinges on several attributes of such a potential union. Here are some of the most pertinent questions:

- When will the union be formed?
- How many and which countries will it encompass?
- How strong will the union's commitment to price stability be?

This section discusses these and related issues. According to the Maastricht Treaty, the union should be formed at the latest by the end of this century. But the Treaty also stipulates that only the countries that will abide by convergence criteria regarding budget deficits, government-debt ratios, inflation, interest rates, and exchange rates will be allowed to join. This, with other factors outlined below, create serious uncertainties about both the timing and the structure of the union.

The charter of the European Central Bank (ECB) as laid down in the Treaty is patterned after *Bundesbank*. The primary goal of the ECB is to maintain price stability. Without prejudice to this objective, the ECB is also supposed to support the general economic policies of the Community. To make the ECB capable of achieving this task, the Treaty endows it with a lot of legal independence. The charter grants to the ECB instrument and narrow-goal independence and strongly protects it from pressures to lend to member governments.[25] In addition, the national central banks of countries in the union are also supposed to be independent from both national governments and Community institutions (Treaty on EU, 1992, Chapter III, article 7).

Despite the fact that the Treaty envisages a monetary union no later than by the turn of the century, large uncertainties currently loom over the creation of a union for several reasons. First, it is likely that many countries in the EU will not be able to abide by the Maas-

[24] This section draws on section 10 of Cukierman (1996).

[25] The ECB cannot set its own objectives because it is directed by law to focus on price stability. But it has narrow goal independence since the quantitative interpretation of price stability is left to the Bank. Details appear on pp. 148-182 of the Treaty on EU (1992).

tricht convergence criteria before the turn of the century. Second, as the time frame for the implementation of a union shrinks, the general public in several countries gets more involved in the issue and more skeptical about the desirability of a union. Those trends, and the traditional reluctance of the UK to join, led to the idea of a *two-speed* union which would initially include a *narrow union* composed of Germany, France, and countries, such as Austria, the Netherlands, Belgium, Luxembourg, and Ireland that maintain unilateral pegs with the German mark. When this paper was first submitted (May 1996) the prospects for even such a smaller union seemed uncertain as popular opposition to it in Germany was increasing.[26] In the absence of Germany, the *anchor country*, a union appears to be pointless. It now (February 1997) appears that the prospects for a narrow union before the turn of the century are greater.

Assuming that the single market and unrestricted capital flows are here to stay, autonomous monetary policies cannot coexist with fixed exchange rates in the long run (Padoa-Schioppa, 1994). So it is likely that a large union will ultimately come into being in the long run, despite the currently mounting opposition to it. But this may very well occur after the beginning of the next century. This raises two types of uncertainty. First, is there sufficient political consensus to create a union? Second, if a union will exist, how should its institutions be structured? Those questions are briefly discussed in the following two subsections.

4.1. The impact of politics on the structure of the monetary union

EMU was originally launched at least as much for political reasons as for economic reasons. Early visionaries of the union were, and probably still are, ultimately aiming at European *political* unification. Within such a broad program, monetary union appeared as a relatively easy first step. But subsequent events demonstrated that the political difficulties on the road to EMU have been underestimated. The basic problem is that Germany and the countries in the hard-core German mark circle are relatively less willing to take risks that jeopardize price stability to engage in stabilization policy. As a consequence, there are natural disagreements about the future form of the EMU. The Germans would like to have a highly independent ECB

[26] Recent polls show that a majority of the German public is opposed to a union.

that would extend the modus operandi of *Bundesbank* and of the German financial system to the entire monetary union. They also insist on strict abidance to the Maastricht convergence criteria. Other countries, such as France, view the union as a way to appropriate some of the credibility of *Bundesbank*. But, at the same time, they want to retain more flexibility to engage in stabilization policy and are not too keen on giving up some of their financial and monetary institutions.

There is little doubt that Germany has a strong bargaining position in any negotiations that may lead to the ultimate formation of a union for two reasons: It has an obvious dominant position in Europe. It demonstrated the ability to provide a stable nominal anchor for other countries during the ERM era and after. So it provided a public good to the other countries in the EU.

If Germany yields too much in current and future negotiations concerning the degree of flexibility allowed to the ECB, this public good may be damaged.[27] The German bargaining position is strengthened even further by the fact that this is common knowledge.

So an important question is: what are the incentives of Germany to join a monetary union whose institutional structure does not quite live up to the standards of *Bundesbank*? An important economic advantage in joining such a union is that it eliminates the ability of other countries to use competitive devaluations against Germany. As previously noted, there is also the political advantage, common to all countries including Germany that the EMU may provide a jumping board for political union.[28]

4.2. How should a monetary union be structured—open issues

The Maastricht Treaty provides the fundamental *constitution* for the ECB. But it leaves many open issues that will have to be settled if and when a union is formed. Some of the open issues are being examined by the European Monetary Institute (EMI). In addition, if it serves their purposes, the first entrants into a union may try to amend the Treaty in ways that would alter its basic spirit. So it is important to examine the more basic motives and constraints facing the potential creators of a monetary union.

[27] A more detailed discussion appears in Meltzer (1995).

[28] Further discussion appears in section 7 of Cukierman (1995a).

There is, in general, a basic tradeoff between advance detailed planning and retainment of the flexibility needed to adapt to unforeseen developments. This tradeoff is particularly important when a fundamental structural change, such as the formation of a monetary union takes place. Such a change causes many imponderables that make the ability to react to unforeseen developments highly valuable. On the other hand, some basic institutional devices that set up the rules of the game for financial markets and for policymakers must be put into place to avoid chaos. Striking the right balance between those two needs is not easy, and some errors are probably inevitable. Flexible advance planning that involves the preparation of several contingencies probably reduces the size of errors and their probability.

When several different fiscal authorities have access to CB credit, each of them internalizes only a fraction of the effect that its own credit has on the general inflation rate of the union (Aizenman, 1992). Being aware of this danger, the drafters of the charter of the ECB prespecified rules for the distribution of *seignorage* in advance. (Seignorage is the value of real resources acquired by the creation of new money.) Even with those safeguards in place, the ECB could engage in cross-country redistributive policies by concentrating its open market operations on the public debt of particular countries. As with direct seignorage, this opens the door to lobbying and political influence. But the institutional solution to this problem is not clear cut. Obviously it is always possible to mandate that any open market sale or purchase will contain prespecified proportions of the public debt of member countries. On the other hand, this would curtail the freedom of the bank to use its main policy instrument in a way that is tuned to short-term developments in the money markets. It is likely that finding the appropriate institution may require some experimentation and that the optimal structure will require some discretion.

An important open issue is how to organize the transition to monetary union and how to assure that the ECB inherits most, if not all, of the accumulated credibility of *Bundesbank* already at the outset. Maintaining the credibility of *Bundesbank* through the transition is, in the long run, a more efficient strategy than seriously damaging it and then having to rebuild it over a long time period.

It is likely that if a union is created before the turn of the century, it will be a narrow union. This raises an important question about the way to limit real, exchange-rate variability among the coun-

tries in the monetary union and the remaining EU countries. Reduction of real, exchange-rate variability between the *ins* and *outs* appears to be important for the orderly functioning of the European single market. Recent agreements in the European Council propose to handle this problem by creating a new, exchange-rate mechanism—ERM II.

The Maastricht Treaty requires convergence in budget deficits and in public debts as a precondition for joining a monetary union. It is also a permanent undertaking for the members of the monetary union to observe the reference values stipulated for debts and deficits. The recent agreements on a *Growth and Stability Pact* has also specified the sanctions in the so-called *excessive deficit procedure* more clearly.
A nominal target or targets for the ECB appears to be desirable. Possible candidates are monetary targets, inflation targets, and perhaps during the transition, exchange-rate targets. Further discussion of these issues appears in Cukierman (1995b).

Other open issues include the choice of monetary-policy instruments and the degree of uniformity in instruments across countries in the union. Here, an important consideration is to assure a sufficient degree of arbitrage across different financial centers in the Community so that monetary policy spreads quickly and evenly across the union. Harmonization in the operation of regulation of payment systems is needed to achieve the integration of the inter-bank market. Similarly, extension of harmonization to monetary-policy instruments and procedures is desirable to avoid regulatory arbitrage and consequent relocation of financial activity. Further discussion of those issues appear in Monticelli and Vinals (1993).

4.3. Summary

In May 1996, when this paper was first submitted, I speculated that the chances that a narrow union will exist before the turn of the century were a bit more than 50 percent. My subsequent speculation, as of February 1997, is substantially above that. If such a union is created, the chances that it will grow into a fully blown union, in the longer run, are good. Even if no union is created before the turn of the century, the likelihood that there will be a monetary union within 10 to 20 years is high for political and economic reasons. For each individual country, a monetary union is a relatively inexpensive symbol of European unity. The tendency towards freer capital markets and the mounting opposition to the EU subsidization of agricultural

production contribute additional long-term economic forces in favor of a union.

5. The pros and cons of joining the EMU versus other options

The main question facing Sweden is whether to join a European Monetary Union—if it will exist. As in standard, cost-benefit calculations, the answer depends on the nature of the alternative course of action. But the matter is not simple because the alternative encompasses several possible scenarios:

1. To build up credibility at home by restructuring domestic institutions, such as the CB and the fiscal, policy-making process and to let the exchange-rate float.
2. To unilaterally peg to the currency of the union without formally joining it or to peg to a more widely diversified basket of currencies.[29]
3. To try to abide by Maastricht criteria, which particularly include upgrading CBI to preserve the option to join, while postponing the decision to join or not to join to a later stage. Various combinations of some of the above are also possible.

Obviously, the option to leave monetary policy completely at the discretion of the political establishment is also feasible. Under this option, credibility will be very low or non-existent. I believe it is dominated by many forms of partial commitment and should be dropped from serious consideration at the start. It may be worth pointing out in this context that Swedish monetary policy has never been fully discretionary in the past. This directs the spotlight to choosing among the various methods of partial commitment outlined above, including the option to join the EMU.

A useful way to think about those alternative methods is in terms of the political cost of reneging on the commitment because this cost determines the commitment's tightness. The main advantage of building credibility at home (via increased independence of the central bank, fiscal reforms, and some form of unilateral peg) over joining

[29] A variant that provides more flexibility at the cost of some credibility is an exchange-rate band. Factors affecting the optimal width of the band are in Cukierman et al., (1994).

the EMU is that this cost can be chosen *ex ante* with a high degree of accuracy. A disadvantage of unilateral pegs is that they are easier to undo, not only for stabilization purposes, but also to accommodate the sub-optimal inflationary temptations of politicians.

What are the potential advantages of joining a monetary union? They include lower transaction costs and reduction of exchange-rate risks. In the near future, the most likely union will include Germany, France, and countries that currently peg to the German mark, such as the Benelux countries, Ireland, and Austria. Sweden's trade with this group of countries is a non-negligible 40 percent of trade.[30] As the size of the union expands, those benefits will also expand. The fact that Sweden has recently joined the EU adds an economic and a political argument in favor of participating. The reasons are elaborated in the following subsection.

5.1. Does membership in the EU strengthen the case for joining EMU?

I believe that in the long run, the answer to this question is a qualified yes. One of the *a priori* economic costs of joining the EMU is that it makes it impossible (or very costly) to use the nominal, exchange rate as an instrument of stabilization policy. This cost is larger the lower the degree of commonality between the real shocks that affect the EU countries and those that affect Sweden. That is because despite the fact that it is likely to be highly independent, the ECB is also likely to partially engage in stabilization policy. The flexibility displayed by *Bundesbank* after the German unification attests to that. So with sufficient commonality between Swedish shocks and EU shocks, the monetary policy of the EMU is also likely to partly provide a countercyclical buffer to Swedish shocks. The current structure of Swedish shocks is admittedly quite different from the average of the EU countries.[31] But it is likely that, in the long run, the common element will grow as a consequence of Sweden's entrance into the EU. Correspondingly, the flexibility cost of tying monetary policy to the EU mast will decrease.

A second argument, which supports this conclusion, is the substantial easing of restrictions on international capital flows with the

[30] Lindbeck Commission (1994), p.41.

[31] There is evidence of substantial current differences in the structure of shocks *even within* EU countries (Helg et al., 1994).

evaluation that this structural change is permanent. In the presence of freer capital flows, the stabilizing power of monetary policy is smaller in any case, so the loss in strongly committing it to price stability by joining the union is smaller. That is because with fewer restrictions on capital mobility, it is more difficult to maintain domestic interest rates at levels that permanently diverge from world levels. This argument presumes that if Sweden does not join the union, its exchange rate with respect to the union's currency will *not be fully* flexible.

Joining the monetary union may also have some political benefits. It could enhance the informal weight of Swedish views within the EU and increase Swedish impact on the evolution of the size and the structure of the monetary union. From a domestic-political perspective, joining the union is likely to make it easier to convince Swedish politicians to back up credibility enhancing reforms of domestic monetary institutions.

5.2. Credibility, flexibility, and the cost of reneging under alternative arrangements

In general, depending on their implicit political cost of reneging, the various institutional arrangements outlined at the beginning of the section provide different points along the credibility-flexibility tradeoff. The larger the cost of reneging, the higher the gains are for credibility. But the foregone flexibility costs, regarding the temporary ability to stabilize the economy, are also correspondingly larger. All the commitment devices, described earlier, buy some credibility at the cost of some foregone flexibility.

What is the optimal point along this credibility-flexibility tradeoff? I do not pretend to have an answer to this fundamental and difficult question. But some of these observations may help those more familiar with the Swedish economy to direct their knowledge toward useful channels:

1. Under any monetary commitment device, the lost, stabilization functions can be at least partially replaced by reforming and readjusting other policy instruments, such as fiscal policy and labor market policies.
2. The more biased the commitment of monetary policy is toward achieving credibility, the more important it is to re-devise fiscal and labor market instruments in a way that would enable their use in a flexible and continuous manner. Such reforms are desirable independently of whether a serious commitment to price stability

is achieved by joining a union or by reforming domestic institutions.

Joining the EMU probably provides a point with more credibility and less flexibility than unilateral pegs.[32] But a point on this tradeoff can be attained—similar to that reached by joining the EMU through appropriate reforms of domestic, monetary institutions. Given this particular point along the credibility-flexibility tradeoff, is it better to achieve it by joining or by domestic reforms? I believe the answer hinges on the political feasibility of the required reforms and on some of the considerations outlined in the previous subsection.

To the extent that the commitment implicit in building credibility at home is weaker than the one implied by membership in a union, it is more likely that the political mobilization needed to implement the necessary fiscal and labor market reforms will be easier if Sweden joins the EMU.

6. Recommendation for a course of action

The basic question facing Swedish policymakers is simple: Should Sweden join a monetary union if and when it is formed? My view is that if a *reasonable* union is formed, Sweden should join. But in view of the substantial uncertainties regarding the creation of a union, its composition, the timing of its formation, and the degree of commitment to price stability embodied in the union's institutions, I believe the final decision should be postponed until the level of those uncertainties is reduced to a reasonable level.

When there is potential for new information, decision-making theory suggests that such a course of action is likely to be optimal when the level of uncertainty is high.[33] I believe some of those uncertainties are likely to be substantially reduced as the deadline for the union formation approaches. This further strengthens the case for delaying straight *yes* or *no* decisions. But the option to join the union should be kept open.

[32] But even in this case, the cost of undoing the commitment is not infinite. So even if Sweden joins, there is a positive probability that it will leave under sufficiently extreme circumstances. Note that by itself, this does not necessarily imply that joining is an undesirable option.

[33] See, for example, Cukierman (1980).

This implies that, in the meantime, Sweden should:

- Reform its monetary and fiscal institutions in ways that would enhance its commitment to price stability.
- Try to abide by the Maastricht criteria.[34]

Such a course of action appears to be advisable whether it is ultimately decided to join or not join a monetary union.[35] The reason is that in the first case, credibility must be created solely by means of reforms in domestic institutions. In the second case, reforms are necessary to leave open the option to join the union. Such a course of action is also desirable because it is costly to postpone those credibility enhancing measures until uncertainties about the monetary union are resolved.

This implies that there is a strong case for starting soon with the upgrading of legal independence of the *Riksbank* and for reforming the budget process in ways that would increase fiscal responsibility. As a matter of fact, similar recommendations were made for wider reasons by the Lindbeck Commission (1994, chapter 2) and the Government Commission on the Status of the Central Bank (*Riksbanken och prisstabiliteten*, 1993). One important, adopted reform concerns the budget process. Since 1996, Parliament votes on total government expenditures first, and then given this total, it votes on the allocations to the different ministries. Most likely, this reform has raised fiscal responsibility.

But other proposed reforms, most notably in the central banking area, have been ignored. The recommendations of the Government Commission on the Status of the Central Bank are particularly relevant in this context.

The CB should be explicitly made responsible for maintaining price stability and should be given sufficient independence to achieve this objective. In particular, highly placed CB board members should not be allowed to hold other offices in government. Board members and the governor should be shielded from dismissal due to policy disagreements.

[34] Abidance or near abidance by the criteria is also desirable because it may be used by the public as a signal of Swedish policy-makers' commitment to price stability even if Sweden does not join the union. Put differently, abidance by the criteria is likely to strengthen Sweden's relative credibility.

[35] In game theoretic terms this is a *dominant strategy*.

With the floating of the crown in 1992, Sweden lost a traditional nominal anchor. To the extent that the current flexible exchange-rate regime persists, the need to raise the independence of the CB becomes even more imperative. Admittedly, now Sweden has an explicit inflation target. But in view of the limited independence of the *Riksbank*, the commitment to this target is rather opaque (Svensson, 1995a). Making the *Riksbank* responsible for attaining the target, and also giving it sufficient independence to achieve it, will elevate the degree of commitment of the existing inflation target and raise the general level of credibility.

How about exchange-rate policy, which is currently under the control of the *Riksbank*? This question is of secondary importance if the current flexible exchange-rate regime persists, because under truly flexible rates, the market determines the exchange rate for a given money stock.[36] But the question may have to be addressed in the future, if it is decided to go back (under some conditions) to a peg or to an exchange-rate band. In view of the growing internationalization of capital markets, I lean toward leaving exchange-rate policy in the hands of the *Riksbank*, even if its independence is upgraded.[37] But if control of this instrument must be moved to the government, I would at least make it conditional on upgrading the independence of the *Riksbank*.

The Swedish Parliament is supposed to decide whether to join the EMU in the fall of 1997. A corollary of the previous first recommendation is that it is better to delay the decision on the EMU for at least two years. An important advantage of postponement is that Parliament is likely to reach a better decision later. To the extent that domestic political considerations make it necessary to reach a decision already next year, I would go along. But I would also try to include escape clauses in the decision that would make it possible not to join under appropriate contingencies—even if Parliament votes, in principle, for joining a monetary union.

Although the Swedish government's position is that Parliament should decide about whether to join the EMU, some parties want a referendum on the issue. Without taking a stand on the issue itself, it appears that, due to the complexity of the issue, it is better to leave

[36] In many countries, including Germany, the final decision concerning the exchange rate is up to the government. But in most, including Germany, the CB also enjoys a substantially higher degree of independence than does the *Riksbank*.

[37] Obviously this issue is relevant only as long as Sweden does not join the EMU.

the decision to Parliament than to the general public, because members of Parliament are more likely to do the necessary homework to reach an informed decision.

7. Concluding remarks

This section briefly summarizes some of the main points of the paper. Limited credibility imposes various costs on the economy. The likelihood of financial crises is higher and so is the employment cost of reducing and maintaining inflation at a low level. The cost of capital to government is higher, the beneficial effects of nominal devaluations is smaller, and the allocative efficiency of the capital market is generally lower. Given the level of commitment to price stability, those costs are more bothersome—the stronger the commitment of other countries to price stability

This paper's basic premise is that Swedish monetary institutions should be reformed to raise the credibility of Sweden's commitment to price stability. This paper discusses theoretical arguments and empirical evidence that support this premise. There are several (not necessarily mutually exclusive) ways to achieve this objective. Increased independence of the central bank, pegging of the exchange rate to a stable currency (or currencies), inflation targets, and joining the EMU—if such a union is formed.

Sweden's credibility record during the 1980s and the early 1990s has been relatively poor due to a variety of interrelated reasons. Among the more obvious are a relatively strong influence of the political establishment on the central bank and a demonstrated willingness to use nominal realignments of the currency to stimulate exports and employment. At a more fundamental level, Sweden's recent large, inflationary bias is due to the interaction of an employment- and export-motivated monetary policy with a high, labor cost for employers—in relation to productivity. Among the factors that contribute to this situation are generous unemployment and retraining benefits, a large government sector, and relatively more fractionalized labor unions than in the 1970s.

The paper briefly evaluates the political and economic prospects for the formation of a narrow and a broad monetary union before the turn of the century and in the longer run. Without Germany, the anchor country, the prospects for the formation of a union are obviously negligible. But there are many political and economic factors,

which support the view that long-term prospects for the formation of a union are substantial.

What are the advantages if Sweden joins a monetary union, if it exists? Besides the obvious immediate reduction in transaction costs and exchange-rate risks, it is likely that long-term benefits will be larger as Sweden becomes more integrated in the EU. A disadvantage of committing to join now is that the scope, structure, and organization of the union are still clouded with uncertainties. The decision on whether to join can be usefully viewed as an attempt to pick the point that is most suitable for Sweden along a *credibility-flexibility* tradeoff. Because of those uncertainties, a transparent reform of Swedish monetary institutions corresponds to a narrower range along this tradeoff than does the joining option.

In the final analysis, should Sweden decide to join EMU? This paper closes with a final recommendation for a course of action on this question.

Once a reasonable union is formed, my attitude toward joining is generally favorable. But in view of the uncertainties currently surrounding the scope, structure, and timing of the union, I propose to postpone the decision until the range of those uncertainties has narrowed. In view of the stipulations of the Maastricht Treaty, many of the uncertainties are likely to be resolved by 1998. Meanwhile, Sweden should enhance the credibility of its domestic monetary institutions by upgrading the independence of the *Riksbank* and leave open the option to join the union. This strategy appears to be a dominant strategy because it is desirable—independently of whether (and when) Sweden becomes a member of the EMU.

Appendix. Stabilization policy and the benefits of credible and transparent commitments—an illustration[38]

Consider an economy and a policy maker whose objective function is to minimize the combined losses from inflation and from deviations of actual from desired employment as specified in this loss function:

$$\frac{A}{2}(N^*-N)^2+\frac{\pi^2}{2}, \qquad \text{(A1)}$$

where N and N^* are actual and desired employment, respectively, π is the inflation rate, and A is a parameter that measures the relative importance attributed by policymakers to achieving their desired employment level compared to achieving price stability.

The economy is characterized by a short run Phillips curve:

$$N-N_n=\alpha(\pi-\pi^e)+\varepsilon, \quad \alpha>0, \qquad \text{(A2)}$$

where $N_n+\varepsilon$ is the (stochastic) natural level of employment, π^e is expected inflation, α is a positive parameter, N_n is the mean value of the natural level of employment, ε is a shock to this level with mean zero, and σ_ϵ is the variance.

Actual inflation is given by:

$$\pi=m-\gamma\varepsilon, \quad \gamma>0 \qquad \text{(A3)}$$

where m is the rate of monetary expansion. The timing of events is as follows. Based on the information from the previous period, unions form a rational expectation of future inflation and set contract nomi-

[38] This illustration is based on a Barro-Gordon type model, which is extended to allow for the existence of real shocks to the natural level of employment so as to allow a useful role for stabilization policy. The notation and the non-stochastic parts of the model are identical to the model in chapter 3 of Cukierman (1992).

nal wages accordingly.[39] After the contracts are finalized, the shock is realized and *only policymakers* observe it. Finally, policymakers choose monetary growth which, with the shock, ε, determine actual inflation via equation (A3). It is well known that, given inflationary expectations, the rate of monetary expansion chosen under discretion is given by this reaction function:

$$m = B_1\varepsilon + B_2 s + B_3\pi^e, \tag{A4}$$

where

$$s = N^* - N_n;\ B_1 = \left(\gamma - \alpha\frac{A}{1+\alpha^2 A}\right);\ B_2 = \alpha\frac{A}{1+\alpha^2 A};$$

$$B_3 = \alpha^2\frac{A}{1+\alpha^2 A}. \tag{A5}$$

The last two terms in equation (A4) represent the well-known (average) inflationary bias of monetary policy. The first term arises because policymakers find it worthwhile to stabilize shocks to the natural level of employment. A socially optimal rule would eliminate the average inflationary bias while retaining the option to stabilize the real shocks (the first term in equation (A4)).[40]

So under a commitment to the socially optimal rule:

$$m = B_1\varepsilon. \tag{A6}$$

Actual policy is normally neither fully committed nor totally discretionary, and the public is not perfectly informed about the influence of each policy regime on actual policy choices. This is reflected here by postulating that actual monetary expansion is given by:

$$m = B_1\varepsilon + k\left[B_2 s + B_3\pi^e\right], \tag{A7}$$

[39] So expected inflation should be viewed as a proxy for nominal wages as set in union contracts. The labor market structure, which underlies this interpretation, is discussed in chapter 3 of Cukierman (1992).

[40] The socially optimal rule is found by minimizing (A1) subject to (A2) and the constraint that the average inflationary bias is zero. So inflationary expectations are zero as well. Further details are in Persson and Tabellini (1993) and in Walsh (1995).

where k is a first-order Markov process given by:

$$k_t = \rho k_{t-1} + v_t, \quad 0 < \rho < 1 \qquad \text{(A8)}$$

and v_t is a stochastic variable with a zero mean. k is a measure of the degree of commitment to the socially optimal rule and the variance of k is a measure of the transparency of the policy regime. The lower the variance of k (which is lower in turn when the variance of v is lower), the more transparent the nature of the policy regime is to the public.

Several extreme cases are worth mentioning. When both k and the variance of v are zero, there is a fully transparent commitment to the optimal rule. When k is zero and the variance of v is positive, there is a temporary (not fully transparent) commitment to the optimal rule. When k=1 and the variance of v is positive, policy is temporarily discretionary. The most common case is the intermediate one in which $0 < k < 1$ and v has a positive variance. Here, policy is partially influenced by the desire to abide by the optimal rule but also by the inflationary temptations that arise under discretion when the policy regime is not fully transparent.

It is clear from equation (A7) that monetary expansion and inflation are affected both by the attempt of policymakers to stabilize temporary shocks to natural employment as well as by more persistent changes in their determination to stick to the socially optimal rule.

In the presence of private information about k activist counter-cyclical policy will be partly interpreted as originating from changes in the determination of policymakers to stick to the optimal rule (a change in k) and therefore will affect inflationary expectations. In particular, expected inflation is determined by the credibility of the commitment to the non-inflationary socially optimal rule.

A measure of this credibility is the perceived value of k which is denoted k^e. I assume for simplicity that in period t, the public already knows the value of k two periods ago with certainty.[41] The public uses this information, with the information about inflation in the immediately preceding period, to form the rational expectation k^e.

[41] But the main message of this appendix goes through in the more general case in which *all* past values of k are never known with full certainty.

Now I show that for a wide class of cases, the credibility of policy-makers with more transparent policy procedures is damaged relatively less—when they engage in stabilization policy. To be concrete, I assume that v_t has a uniform distribution with upper-bound ρk_{t-1} and lower-bound $-\rho k_{t-1}$.[42] When combining equations (A3) and (A4), actual inflation is:

$$\pi = -B_2\varepsilon + k\left[B_2 s + B_3\pi^e\right]. \tag{A9}$$

Let $E[y|x]$ be the optimal linear predictor of y given x. From (A9), expected inflation is:

$$\pi_t^e = \left(B_2 s + B_3\pi_t^e\right)E\left[k_r|I_t\right] \tag{A10}$$

where $I_t = [\pi_{t-1}, k_{t-2}]$ is the information set of the public at the start of period t.

Consider two consecutive periods denoted by zero and one, respectively. Let $k_0 < 1$ be the initial actual value of k.[43] Rearranging (A10) and setting t=1 yields:

$$\pi_1^e = B_2 s\frac{k_1^e}{1 - B_3 k_1^e}. \tag{A11}$$

This equation gives expected inflation for period 1 with respect to the optimal linear predictor of k_1. This predictor is given, in turn, by the regression of k_1 on π_0:

$$k_l^e = E\left[k_1|I_t\right] = \rho^2 k_{-1} + \rho\theta\left[\frac{\pi_0}{p_0} - \rho k_{-1}\right] = \rho^2 k_{-1} + \rho\theta\left[-B_2\varepsilon_0 + p_0 v_0\right] \tag{A12}$$

[42] This specification is adopted to insure that: (i) all possible realizations of k_t are larger than zero and, (ii) that the expected value of v_t is zero.

[43] For the uniform specification of the distribution of v, k_1 has positive mass only in the range below one provided $k_0 \leq \rho/2$.

$$\theta = p_0^2 \frac{\sigma_v^2}{B_2^2\sigma_\varepsilon^2 + p_0^2\sigma_v^2}, \qquad p_0 = B_2 s + B_3\pi_0^e. \tag{A13}$$

where equations (A11) and (A12) imply that, for given realizations of ε_0 and of v_0, the inflation rate expected for period one is higher—the higher θ (and ρ) are. θ is higher, in turn, the larger the variance of the innovation v to the strength of commitment to the socially optimal policy rule. Recall that when this variance is large, the transparency of the commitment is low.

Suppose now that the realizations of v and of ε happen to be the same in two countries in period zero. Let ε be negative for concreteness so that, in both countries (to stabilize the negative shock to natural employment), the rate of monetary expansion is above its mean value.

As a consequence, inflationary expectations at the start of period 1 are higher in both countries. But the impact of the shock on expectations in the country with more, transparent, policy procedures is smaller. The country with more, transparent, policy procedures stabilizes employment to the same extent as the country with less-transparent procedures but pays less for foregone credibility. Note that the higher credibility cost of the country with less-transparent procedures cumulates because the higher inflationary expectations in period 1 cause the less-transparent policymakers to inflate at a higher rate in period 1 and so on.

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