

Arbetsrapport

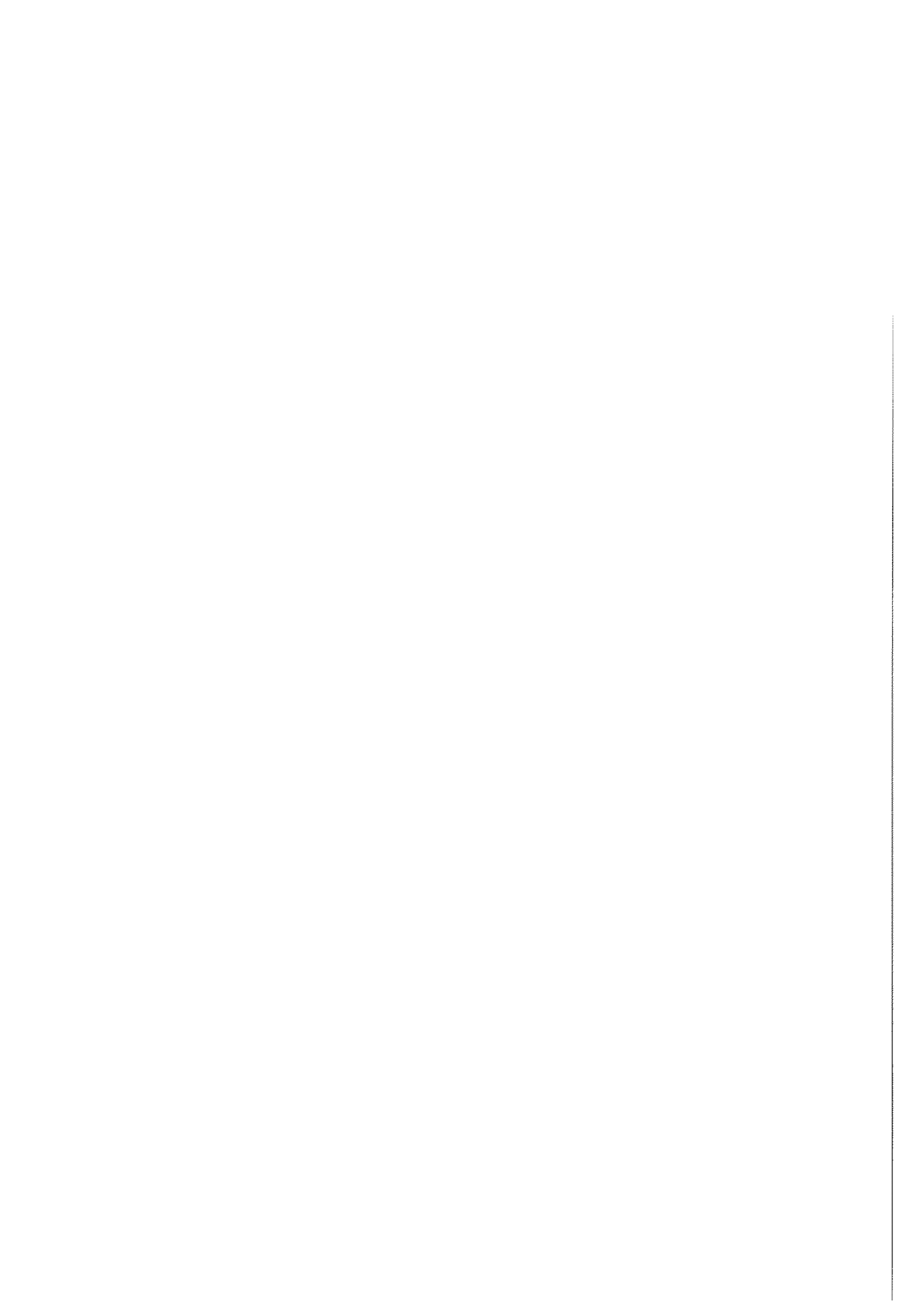
Nr 8
April 1993

The Struggle to Turn the Swedish Krona into a Hard Currency

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Paper prepared for the CEPR/Bank of Finland conference "Exchange Rate Policies in the Nordic Countries" in Helsinki, September 21st-22nd 1992. The paper was originally, at the suggestion of the organizers, entitled "Has the Swedish Krona Turned into a Hard Currency?" The paper was revised March 1993. We are grateful to Zhaohui Chen, Alberto Giovannini, Marvin Goodfriend, Christina Lindenius, Yngve Lindh, Jonny Nilsson, Pentti Pikkarainen, Paul Söderlind, Lars Svensson, Niels Thygesen, Anders Vredin and participants at the conference for comments. The opinions expressed are solely those of the authors and should not be seen as reflecting Sveriges Riksbank's views on the matters concerned.



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1 Introduction

What is a "hard currency"? The phrase is frequently used but rarely defined, presumably because it belongs to journalistic rather than academic jargon. To make sense of the title of this paper we must therefore begin by clarifying our terms. The term "hard currency" is often used (favourably) to characterize nominal exchange rates. "Hard" is then defined by the absence of depreciations or devaluations.¹ This is obviously a relative measure, the nominal exchange rate being the relative price between two national currencies. Moreover, the exchange rate is at most an intermediate policy target. To be valuable, a hard currency policy must deliver more than a non-depreciating exchange rate. In terms of an ultimate target variable, we define a hard currency – in an absolute sense – as characterized by a stable real value in terms of the consumption basket. Under this definition, a hard currency policy is thus synonymous to a policy aimed at price stability.

Under some assumptions, relative and absolute hardness can be more or less equivalent. The simplest case is to assume that absolute purchasing power parity (PPP) holds as an equilibrium condition in the long run. Then the nominal exchange rate (units of domestic currency per unit of foreign currency) must equal the ratio between the domestic and the foreign price levels. Consequently, if the currency of a (small) country is permanently pegged to a foreign currency with a stable real value, it will also behave as a hard currency in the long run.

The hardness of a currency is tested if there is a shock to the domestic price level, leading to a real appreciation. Then the question arises how PPP will be re-established. Under a hard currency policy, an adjustment period during which the domestic rate of inflation is lower than that in the reference currency is necessary. However, if the economy is characterized by nominal rigidities, disinflation is a trying process, both economically and politically. Pressures may arise for a devaluation, accommodating the increase in the price level. Under less than perfect credibility, this will result in high interest rate differentials and intermittent "currency crises" when the determination of the policy makers is put to test.

If we look at Sweden in this perspective, we see a country on a fixed exchange rate that during the second half of the 1980s experienced a real appreciation

1) For example, this is the notion used when referring to an entity that would never depreciate relative to any ERM currency as "the hard ecu".

as a result of an average inflation rate above that in the reference currencies. Sweden did not pass the test of absolute hardness described above, despite the fixed exchange rate. The nominal adjustment was too slow to prevent the economy from going into the worst depression experienced in the post-war period. In the process, inflation dropped to levels consistent with a hard currency policy, but during the turmoil on the European currency markets in September 1992 the krona came under heavy pressure. The fixed exchange rate was assiduously defended with high interest rates and the turmoil subsided. However, tensions soon re-emerged. This time, in November 1992, the capital outflows proved to be uncontrollable, not least because the interest rate levels required to stop the speculation against the krona would have been too much of a burden on an already weak economy. The fixed exchange rate was therefore abandoned. The krona has subsequently dropped significantly in value, i.e., it has not met the relative hard currency criterion. However, the struggle to turn the krona into a hard currency in the absolute sense continues. The Riksbank – the Swedish central bank – has announced an inflation target of 2 percent from 1995 onwards. Policy makers are thus determined to maintain the low rate of inflation achieved in recent years through a policy expressed in terms of the ultimate objective of price stability.

The purpose of this paper is to review and analyse the Swedish experience from trying to win a reputation for being a hard currency country, with a special focus on monetary and exchange rate policy. We will not deal in any detail with the motives for choosing a hard currency strategy. At a general level, we interpret this as an acceptance of the vertical Phillips curve as the best description of the long-term relation between inflation and unemployment, making policy makers choose price stability as the long run target for monetary policy. The fixed exchange rate, in turn, was a means to affect expectations about the policy that will be pursued if the domestic price level should rise, conceivably improving the short-run trade-off between inflation and unemployment. If credible, the fixed exchange rate will also reduce the likelihood of price increases caused by expectations of inflationary or accommodative policies in the future.²

We will take the devaluation in October 1982 as the starting point for the hard currency policy. This is consistent with the policy statements made at the time and the strong measures taken to defend the fixed exchange rate when its credibility was questioned. This is not to deny that the krona during much of the 1980s failed to live up to the absolute requirements of a hard currency.

2) For discussions of the relevance of credibility aspects for Swedish exchange rate policy, see Agell and Vredin (1991a,b) and Hörngren (1991).

Neither do we want to absolve the policy makers from a major part of the responsibility for these deviations from the straight and narrow path. However, we think that it is relevant to interpret the developments in Sweden not as the result of changing policy targets, but as an ongoing struggle to maintain and enhance the credibility of the krona as a hard currency. If we were to put theoretical labels on the policy makers' behaviour, we would say that they accepted the vertical Phillips curve in the early 1980s, but only gradually recognized the importance of making credible commitments to support the policy statements. As it turned out, this realization came too late, at least in the sense that the Swedish economy was allowed to slip badly off track before major adjustments were made.

It is the process through which this change of perspective has taken place that we will try to chart in this paper. It is organized as follows. In section 2, we outline Swedish exchange rate policy in the "soft" period between the collapse of the Bretton Woods system and the 1982 devaluation. Section 3 covers the policies in the past ten years, characterized by the struggle to establish the credibility of the hard currency policy. In section 4, we try to put the Swedish development into a broader perspective by identifying some important characteristics in the Riksbank's behaviour and by linking these observations to recent work on positive analysis of central bank behaviour. Section 5 offers concluding comments.

2 Swedish exchange rate policy 1973-1982: A brief review

As a background to the current situation, we will in this section briefly describe Swedish exchange rate policy in the period that led up the 1982 devaluation, by assumption, the starting point for the hard currency policy.

After the final breakdown of the Bretton Woods system, the krona was linked to the European currency snake. This system – the precursor to the EMS – implied a D-mark peg and could be interpreted as a hard currency option. However, it soon emerged that policy targets in Sweden and Germany were not congruent. Unemployment is traditionally a target given considerable weight in Swedish economic policy; cf. Diagram 1. In order to maintain high employment, the first oil price shock was met with a fiscal expansion, the so-called bridging policy period 1974-76. This accommodation of the inflationary impulse, in combination with substantial increases in pay-roll taxes, made Swedish wage costs rise by 42 percent during 1975 and 1976. In Germany, in contrast, price stability was given priority, leading to tighter policies. Consequently, as Diagram 2 shows, Swedish and German inflation rates diverged, leading to a real appreciation of the krona; cf. Diagram 3. To close this gap, the krona parity exchange rate in the snake was devalued twice, in October 1976 and April 1977, by altogether 9 percent. Finally, in August 1977, the krona was taken out of the snake system. At the same time, it was devalued by 10 percent relative to the new benchmark, a trade-weighted currency basket.³ The official motivations on all three occasions emphasized Sweden's competitiveness, i.e., the purpose was to offset the effects of past price and wage inflation. The devaluations in 1976 and 1977 were sufficient to restore competitiveness to the pre-1975 level, which improved the growth rate in real GDP substantially; cf. Diagram 4. In the years immediately after the switch to the currency basket, inflation was kept roughly in step with the basket weighted international rate of inflation; cf. Diagram 2.

The replacement of the D-mark with the currency basket is open to several interpretations. On the one hand, policy makers can be said to have acknowledged that it was impossible and/or undesirable to keep the Swedish inflation rate in step with that in Germany. Devaluations were inconsistent with a hard currency policy. Perhaps more importantly, however, the decision to peg the krona to a basket including currencies of countries that could be expected to have higher average inflation rates than Germany indicated a "softening" of

3) The Swedish currency basket system is described by Franzén et al. (1980).

policy. By shifting to the basket, Sweden made it easier to maintain an unchanged peg, at the same time making room for somewhat higher domestic inflation. This is not to say that the basket was a "soft option" in an absolute sense, but it set a target equal to an average of international inflation rates rather than that of Germany alone.

It may be argued that from the point of view of how to construct a currency basket that is to protect the domestic economy from international disturbances and stabilize competitiveness, a trade-weighted basket was superior to the D-mark. In particular, the basket had the advantage of reducing the impact of swings in the dollar/D-mark rate. If the D-mark weakened relative to the dollar and the basket index was kept constant, the krona would depreciate relative to the dollar, but also appreciate relative to the mark. In this way, swings in international exchange rates were averaged over several krona exchange rates. A trade-weighted currency basket can thus be seen as a device that smooths the impact of external (nominal) disturbances on the effective real exchange rate.

This illustrates that the peg chosen under a hard currency policy – based primarily on its expected inflation performance – need not coincide with the one preferred given ambitions to stabilize international competitiveness. In principle, the choice between a hard currency peg and a trade-weighted basket should be therefore be made on the basis of the perceived structure of nominal disturbances. For example, if inflationary wage increases are common, a pure hard currency strategy, with strong emphasis on the fixity of the peg, may be needed to break these patterns, even if this makes the economy more susceptible to international disturbances.⁴

It is unlikely that the Swedish decision to leave the snake was motivated by increased concern for short-term exchange rate disturbances.⁵ It must be interpreted as an adjustment to the difficulties of keeping inflation in step with the German rate. By accepting higher inflation, policy makers may have hoped to exploit a Phillips curve trade-off, consistent with Sweden putting greater weight on the employment target than Germany and more in line with the average weight assigned to it by Sweden's trading partners.

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- 4) As Sweden later had reason to reconsider the choice of exchange rate peg, we will return to these issues below.
 - 5) Provided that PPP is approximately upheld in the long run, such disturbances will primarily have temporary effects. This indicates that the choice of a trade-weighted basket may also reflect stronger concern with short and medium-term stability than a hard currency peg.

In September 1981, the krona was devalued by 10 percent relative to the basket. This time the official motivation was not based on the standard competitiveness arguments. Instead reference was made to the need to strengthen the tradables sector, i.e., the aim was to rectify perceived structural imbalances. This tradables/non-tradables vision of the economy was even more clearly spelled out in connection with the 16 percent devaluation in October 1982. The logic underlying this decision can be described as follows. The new government that had just come into power had decided that a fiscal tightening was necessary to reduce the persistent budget deficits; cf. Diagram 5. In these circumstances, a devaluation may help to speed up the adjustment of the economy to lower public sector spending, affecting primarily the non-tradables sector, by stimulating demand in the tradables sector. The rise in the relative price between tradables and non-tradables – and the corresponding fall in the real wage rate measured in terms of tradables – is expected to make the tradables sector expand and absorb the labour resources made available by the contraction of the non-tradables sector.

It is interesting to note, not least in the current context, that the original plan was to combine the 1982 devaluation with a return to a Dmark peg, consistent with the hard currency interpretation of this decision. However, this proposal fell through at the very last moment, primarily due to misunderstandings between the Swedish government and the German Bundesbank.⁶ If carried out, this could have strengthened the impression that Sweden intended to embark on a hard currency policy, the D-mark probably being seen as a "harder" reference point than the currency basket.

Whether the Swedish economy would have behaved differently during the 1980s under a D-mark peg is unknown, of course. On the basis of the blueprint, it is still possible to interpret the 1982 devaluation as part of an attempt to break with the patterns and policies that had characterized the Swedish economy in the 1970s, not least in terms of price and wage performance. A big once-and-for-all exchange rate adjustment – not related to an overvaluation of the krona – was to lay the grounds for balanced growth with stable prices and full employment. The declaration that the exchange rate from then on was to be kept fixed was supposed to induce the necessary discipline in price and wage setting behaviour.

6) These events have recently been documented by Bergström (1991). The confusion was concerned with whether Sweden could introduce a unilateral D-mark peg without formal approval from the Bundesbank. Uncertainty on this point made policy makers stick to the trade-weighted basket.

Whether this strategy should be seen as sensible from an *ex ante* point of view is not clear. That it was risky to try to start a hard currency policy by exposing the economy to such an inflationary shock is beyond doubt, however. The strategy rested on the ability to contain the inflationary impulses from attempts to compensate for the loss in real wages already incurred and to prevent expectations of additional devaluations in the future from pushing up wage and price increases. Rather than attempting a general evaluation of the devaluation strategy – we would have little to add to the one made by Henrekson (1991) – we will study Swedish monetary and exchange rate policy over the past ten years. We will focus on the adjustments of policies and institutions made to maintain – and from time to time reinstall – the credibility of the fixed exchange rate commitment and the hard currency strategy.

3 The struggle to make a unilateral exchange rate peg credible

The possibility to replace the currency basket with a D-mark peg or some other "harder" reference point did not come back on the agenda after the 1982 devaluation. It is conceivable that Sweden in the early 1980s could have been accepted as an associate member of the EMS. However, the EMS at this time was not an obvious hard currency arrangement, although some countries, notably Germany and the Netherlands, pursued hard currency strategies. It is thus not self-evident that Sweden simply by joining the EMS would have gained much in terms of credibility. In any case, the task that Swedish policy makers set for themselves was to manage a unilaterally fixed exchange rate according to the principles of a hard currency.

3.1 The initial institutional setting

As a background, it is important to recall that in 1982 Swedish financial markets were highly regulated. The Riksbank set both prices and quantities in major segment of the credit market and foreign exchange controls were in force. One effect of the regulations was to secure cheap financing for the government and the housing sector. The government also borrowed heavily in foreign currency. By financing the current account deficits, the government assumed exchange rate risk that otherwise – given that the exchange controls prevented foreigners from holding krona assets – would have been shifted to the domestic private sector. Other things equal, this had the effect of keeping krona interest rates down, which also was intended to encourage investments in the industries given access to domestic credit.

An erosion of the regulatory system was under way, however, and the Riksbank had begun to use its overnight lending rate to banks – "the penalty rate" – to influence short-term capital flows.⁷ Banks had unlimited access to central bank credit at a constant interest rate, implying a horizontal supply curve for borrowed reserves. Losses of foreign exchange reserves were thus automatically sterilized by increased borrowing at the discount window, unless the penalty rate was raised. It was a rather inflexible system also because decisions on interest rate changes could only be made by the governing board of the Riksbank, a body that meets regularly at most once a week, and because the Riksbank was reluctant to make too frequent changes in the penalty rate. All

7) See Englund et al. (1989) for details.

in all, this gave rise to a high degree of short-term interest rate smoothing and the short end of the yield curve tended to be flat. The fixed exchange rate was based on a target value relative to the basket index, but the Riksbank had not announced any boundaries for the index, i.e., the krona was allowed to vary within an unspecified target zone. At a later stage, the Riksbank disclosed that it had been working with a band of ± 2.25 percent.

This system was far from ideal from the point of view of making a hard currency policy or a fixed exchange rate credible. First, the absence of a target zone made the exchange rate commitment seem vague. Second, the inflexibility of interest rate policy limited the ability to defend the krona against speculative attacks and reduced the market induced interest rate responses to losses of foreign exchange reserves. The preference for interest rate smoothing implicit in the penalty rate system was difficult to reconcile with the requirement to use interest rates to stabilize the krona. Third, the regulations were effectively structured so as to protect the government and the politically important housing sector from the adverse interest rate effects of inflation and currency market disturbances. The policy makers thus had neither economic nor political incentives to aim for price stability. The government incurred losses on its foreign currency debt when devaluations were made, but this had had no restrictive effects in the past. Perhaps this was because these losses were more than offset by the resulting fall in the real value of the long-term krona denominated debt. Alternatively, it is possible that the krona value of the government foreign debt is too subtle a notion to have much influence on short-term economic policy, especially since the costs can be pushed far into the future. In any case, the weak incentives for a non-inflationary policy cannot have made the krona look more like a hard currency in the eyes of the public.

3.2 Deregulation and institutional reform

Over the past ten years, most of these institutional features have been changed. In the rest of this section, we will try to chart the process through which these changes have been made. The general picture that emerges is a mixture of strategic moves, in particular in the deregulation of financial markets, and a stepwise adjustment of institutions and operational techniques as they have been found to be ineffective or inappropriate in the new environment.

As part of the strategic restructuring, a ban on net government borrowing in foreign currency was introduced in 1984. This meant that domestic interest rates had to be adjusted to make private foreign currency transactions balance. Gradually, starting in 1983, domestic credit market controls were lifted and by 1985 quantities and interest rates on both loans and deposits could be set

without central bank involvement. Then attention was turned to international transactions and the last parts of the foreign exchange controls were repealed in 1989. In a parallel development, the regulatory policy instruments were replaced by conventional market-based techniques for controlling the supply of bank reserves. The marginal overnight lending rate to banks became the most important instrument of monetary policy.⁸

The result of the deregulation was that, to prevent capital flows from undermining the fixed exchange rate, krona interest rates consistently must be aligned to the rate of return private investors require on krona assets. In combination with the ban on net foreign currency borrowing, this implied that the government was forced to borrow at krona interest rates that reflect swings in the credibility of the exchange rate peg. In a deregulated environment, increases in interest rates are also transmitted to the private sector. Consequently, the government must bear both economic and political costs for policies that undermine the confidence in the krona. Although the primary driving forces were of a different kind, not least the erosion of the regulatory system and the need to develop new instruments, the deregulation led to a restructuring of the political incentive system. By exposing their actions to market scrutiny, policy makers imposed penalties on themselves, should they fail to maintain the credibility of the fixed exchange rate.

The first opportunity to demonstrate the readiness to use interest rates to defend the krona occurred in early 1985.⁹ After a period of losses of foreign exchange reserves, the Riksbank in January raised the overnight lending rate by four percentage points. In addition, the currency basket index was for the first time since the devaluation allowed to rise well above the target value; cf. Diagram 6, which shows the deviations of the krona exchange rate from central parity for the period January 1982 to November 19th 1992. This depreciation was intended to create expectations of a future reversal towards the target value, making krona assets more attractive by promising capital gains, a strategy that is consistent with interest rate smoothing. However, it appears that market participants had come to regard the target value as the upper bound of an implicit target zone.¹⁰ When this was broken through, uncertainty about exchange rate movements increased, raising the required interest rate differential. This is illustrated in Diagram 7, which shows the three-month interest rate

8) Englund (1990) discusses the deregulation in more detail. The new policy procedures are presented by Englund et al. (1989), and Hömgren and Westman-Mårtensson (1991).

9) For detailed discussion of this episode, see Hömgren and Viotti (1985a,b) and Franzén (1985).

10) Edin and Vredin (1993) analyse the determinants of devaluation in the Nordic countries. On the basis of their results, it is difficult to explain this incident with reference to a "fundamental" weakening of the Swedish economy.

differential between Euro-deposits denominated in Swedish kronor and basket currencies. Similarly, the forward rate, shown in Diagram 8 as the deviation from central parity, was well outside the unofficial target zone of ± 2.25 percent, indicating that investors did not exclude a depreciation beyond this limit.¹¹ Capital outflows accelerated and the Riksbank raised the overnight interest rate by an additional two percentage points.

Interest rates could be brought down after the Riksbank had announced an official target zone of ± 1.5 percent around the benchmark value. This illustrates how credibility can be improved by making the policy rules more transparent. Apart from reducing the risks of policy signals being misinterpreted, this limits the discretion of the policy maker as it is more costly to break an explicit rule than to deviate from a pattern based on implicit conventions only.

These events had also pointed to the limitations in the Riksbank's techniques for short-term interest rate control. The automatic sterilization of losses of foreign exchange reserves in the penalty rate system tended to delay an upward adjustment of market interest rates. This gave a high degree of interest rate smoothing, but made capital flows more volatile, with potentially destabilizing effects on the foreign exchange reserves. The need for a more flexible system led to the introduction of the so-called interest rate scale in January 1986.¹² In this way, the Riksbank shortened its response time to swings in capital flows, effectively reducing the degree of sterilization and interest rate smoothing.

3.3 The divergence from the hard currency path

During the rest of the 1980s the need for such flexibility was not so apparent. The absence of major disturbances indicates that the exchange rate peg was seen as more or less credible; cf. Diagram 9, showing 90 and 100 percent confidence intervals for devaluation expectations.¹³ One reason was the domestic economic situation, characterized by a strong boom. To understand this development it is necessary to consider the effects of the 1982 devaluation.

11) This is a version of the so-called simplest test of target zone credibility presented by Svensson (1991).

12) See Englund et al. (1989) and Hörngren and Westman-Mårtensson (1991) for details.

13) The expectations are calculated according to the drift adjustment method suggested by Bertola and Svensson (1992) and a version of the simplest test presented by Svensson (1991), respectively. The drift adjustment method is implemented empirically on Swedish data by Lindberg et al. (1993).

As Diagram 3 indicates, the devaluation had made the krona strongly undervalued. As a result, exports and profits in the tradables sector picked up rapidly. Less progress was made in effecting the transfer of resources needed to achieve a commensurate expansion of capacity in this sector. One reason was that demand was buoyant also in the sheltered sectors. Instead of shedding resources, as it should according to the blueprint, the private non-tradables sector was expanding. In addition, the restructuring of the public sector went slower than anticipated, partly because the pressure for – and the political acceptance of – cut-backs in expenditure programs was reduced as the economy expanded and government revenues increased.

Inevitably, general excess demand developed, in particular in the labour market, leading to increases in the rates of price and wage inflation, especially from 1987 and onwards; cf. Diagram 2. Such a development is at odds with the requirements of a hard currency. However, since a devaluation in an economy with no excess capacity makes little sense, the short-term credibility of the fixed exchange rate is not seriously impaired. Instead, real interest rates tend to fall, as nominal rates reflect (expected) international rather than domestic inflation rates. This spurs domestic demand by making credit cheap and savings unattractive. For example, in early 1989 a household mortgage loan cost around 12 percent, which implied a real rate before tax of around 5 percent.¹⁴ Since nominal interest payments were deductible at a marginal tax rate of 50 percent, the real after tax interest rate was negative. Not surprisingly, credit expanded very rapidly, feeding both goods and asset price inflation.

There is little that a central bank firmly committed to fixed exchange rates – and thus unable to control interest rates and credit expansion – can do in this situation. Exploiting the potential for exchange rate movements within a target zone, the Riksbank tried to keep the interest rate differential as high as possible. As Diagram 6 shows, the krona index was kept in the lower (stronger) part of the band. This creates a potential for a depreciation within the band, which, other things equal, tends to raise short-term nominal interest rates. In addition, the Riksbank made sterilized net purchases of foreign currency, leading to a gradual increase in foreign exchange reserves.

Whatever the effects of these policies, they were insufficient to prevent general excess demand from developing and an inflation gap to the rest of the world opened up. This thwarted the plans for a balanced recovery, led by the tradables

14) It is not self-evident that current inflation gives the best estimate of the expected real interest rate. However, as will become evident below, it is not unlikely that many at this time expected inflation to rise even further.

sector.¹⁵ The record for the 1980s thus shows that Sweden – although sticking to the fixed exchange rate – failed to pursue a policy consistent with an inflation rate at par with the reference currency. It can be argued that active demand management is not the task of the government and that the fixed exchange rate shifted the responsibility for price and wage developments to private sector decision makers. Although we basically agree with this position, the argument hardly carries much weight in this case. The time to abstain from “tuning” – be it “fine” or “gross” – is not in the aftermath of a major policy-induced shock, with strong expansionary and inflationary effects. Quite apart from whether it was sensible, *ex ante*, to devalue the krona in 1982, policy makers can be faulted for lack of consistency. As Henrekson (1991) shows they did not achieve the fiscal tightening necessary to make resources available to the tradables sector.

It has been argued that the credit expansion contributed to the overheating. As a factual statement this is correct. However, the fixing of the exchange rate and The deregulation of credit markets, decisions taken by the Riksbank but with support from the parliament and the government, disarmed monetary policy as a tool for demand management. The responsibility for containing the expansionary effects of the devaluation therefore rested with the fiscal authorities.¹⁶ Irrespective of how the responsibility is to be shared, the result was that inflation got out of hand. As we mentioned in the introduction, this is the time when a hard currency policy is tested.

3.4 The initial tests of the fixed exchange rate

The first test came in February 1990, when the government resigned after having failed to get support in the parliament for a set of fiscal austerity measures. This instigated a flight from krona assets and the Riksbank had to make substantial interventions to support the krona. To stop the losses of foreign exchange reserves, it raised the overnight interest rate by three percentage points. This pattern was repeated in October 1990, when outflows were caused by rumours of an imminent devaluation, to be combined with a shift to

15) It is ironic that a large part of the real investments in this period went into commercial real estate, about as far from tradables as one can get. That credit losses from real estate lending recently have created severe problems in the Swedish banking industry does not make the record any more favourable.

16) One driving force behind the credit expansion was, as illustrated by the numerical example above, the tax system. Sweden made a major tax reform in 1990-91, i.a., reducing deductibility of interest rate costs to 30 percent. It has been claimed – with hindsight – that credit market regulations should have been retained until a proper tax system had been put in place. However, it can also be argued that the deregulation may have made way for the tax reform by revealing the inequities and inefficiencies of the old tax system.

an ecu peg. This time the Riksbank raised the overnight rate by altogether five percentage points to reverse capital flows. These incidents indicated that a credibility problem had emerged. This is also illustrated by the expected rates of devaluation reported in Diagram 9. Innumerable declarations from the Riksbank and the government stating that the experiences from the previous devaluations showed the futility of such a policy were insufficient to root out these expectations.

In our opinion, it is useful – and plausible – to interpret the Swedish experience as an example of a policy maker that has difficulties in conveying his actual policy targets to the public.¹⁷ The policy maker is determined not to accommodate inflationary disturbances. If competitiveness is eroded due to excessive price and wage increases, he will let the nominal adjustment run its course through a recession, on the assumption that accommodation would lead to more inflation and only temporary gains in employment. If this was known, private sector decision makers would be cautious when setting wages and prices. However, due to past experiences of soft policies, they remain sceptical about the policy maker's willingness and/or ability to stick to the announced strategy, creating self-fulfilling expectations of high inflation.

The extent to which such a divergence between actual and perceived policy goals has contributed to bringing Swedish inflation out of line is unknown. However, the development during the 1980s is consistent with a situation where private sector decisions are based on the belief that price and wage increases will be accommodated. Clearly, the actual inflation performance in the second half of the 1980s will not have made private agents more confident that the policy declarations would hold. The traditional emphasis on high employment will also have mattered, despite declarations that price stability was seen as a precondition for long-term full employment. We interpret this development, at least partly, as a result of an underestimation of the importance of making strong commitments or, given the difficulty for policy makers to commit themselves in a credible way, of pursuing a policy that sticks closely to the announced targets.

Irrespective of whether confusion about the policy targets is a causal factor or not, under less than perfect credibility a recession will give rise to intermittent currency crises when the steadfastness of the policy maker is tested. Somewhat paradoxically, a currency crisis can be seen as an opportunity for a central bank with a latent credibility problem. By actively contributing to the increase in

17) In formal terms, the policy maker would be said to have a reputational problem. For a review of the relevant literature, see Persson and Tabellini (1990).

short-term interest rates, it can show its determination and ability to stick to the announced policy, i.e., it is an "investment in credibility" to successfully fight off a currency crisis. If market participants see that the central bank is willing to go to great lengths to defend the currency, not only will they take the opportunity to buy domestic assets, thus reversing the capital flow, but they may also feel more confident that the central bank will withstand future crises. The net effect of a drastic increase in short-term interest rates may therefore be that long-term rates fall; cf. the events marked with arrows in Diagram 10.

However, this is clearly a case of making the best out of a bad situation. Interest rate shocks lead to increased volatility and, on average, higher interest rate differentials. Neither is conducive to economic recovery. Eventually, the true policy targets will be revealed, but recovery is delayed and the losses in terms of unemployment and output may be high. In these circumstances, the policy maker has strong incentives to try to demonstrate his true policy targets by some other means.

3.5 The search for "harder" commitments

The fixed exchange rate being the most visible element of the Swedish hard currency policy, it is inevitable that the lack of credibility would show up in expectations of devaluations. Similarly, it is logical for policy makers trying to signal their actual policy targets to strengthen the commitment to the fixed exchange rate. This led to a reconsideration of the currency basket as the reference point for the krona.

In this context, the difference between volatility of krona interest rates and the relative stability of the multilateral co-operation in the EMS was telling. The EMS was in practice not open to countries outside the EC, but new opportunities to demonstrate the commitment to the fixed exchange rate arose as a result of Sweden's decision in the fall of 1990 to apply for EC membership. In May 1991, following Norway's example from October 1990, the Riksbank announced a shift to a unilateral ecu peg.¹⁸ The central rate was set so as to give an unchanged overall exchange rate and the band was maintained at ± 1.5 percent.¹⁹ To indicate that the decision was more than the replacement of one currency basket with another, the Riksbank announced that Sweden, as soon

18) Exchange rate policy in Sweden – including the choice of exchange rate system – is the exclusive responsibility of the central bank. Some aspects of the Riksbank's legal position are discussed by Hörngren and Westman-Mårtensson (1991).

19) See Lindberg and Lindenius (1991) for details about the ecu peg and its implications for krona exchange rates.

as such an option became available, would seek formal association with the EMS, the ultimate objective being to bring the krona into the ERM.

Unlike the earlier currency basket, the ecu did not reflect the currency mix in Sweden's foreign trade. The most important difference was the exclusion of the U.S. dollar, which had a weight of around 21 percent in the basket. Thus, the Swedish exchange rate system is no longer designed to protect the real exchange rate against swings in the dollar/D-mark rate, i.e., the useful smoothing properties of the basket were lost. However, the ecu peg was a natural consequence of the Swedish application for EC membership. With Sweden as a member of the EC, the krona would one day be linked to the ecu, i.e., the question was not *if* but *when* the currency basket would be abandoned. This made it important to link the krona to the EMS at an early stage, to avoid concerns that this step would be combined with changes in the exchange rate. That the Swedish ecu peg was preceded by and explicitly linked to the membership application also meant that it was seen as a "harder" commitment, although formally it was as unilateral as the peg to the basket.

The credibility of the fixed exchange rate increased as a result of the ecu peg. There was a significant inflow of capital and interest rate differentials fell; cf. Diagram 7. A period with small but persistent outflows began. This was part of a plan to reduce the foreign exchange reserves, that were seen as excessively large following the inflows after the ecu peg. In response to the outflows, the krona/ecu rate was kept in the weaker part of the target zone, which given credible boundaries also made the required interest rate differential smaller. In general, the market situation in the months after the ecu peg was quite stable. However, as Diagram 9 shows, the ecu peg had not completely cured the latent credibility problem. Some devaluation expectations remained, albeit at a much lower level.²⁰

In the wake of the Finnish devaluation in November 1991, the credibility problem once more came to the fore. *A priori*, there seemed little reason for investors to draw parallels to Sweden as the differences between the Swedish and the Finnish economies were quite striking. For example, in Sweden the fixed exchange had almost unanimous support from political parties, unions, and industry representatives. In Finland, on the other hand, the important forestry industry demanded a devaluation and the government was not united in its rejection of these demands. Despite these differences, the Finnish devaluation did influence investor confidence in the krona and large outflows

20) According to Lindberg et al. (1993), the expected time to devaluation increased from 2 to 38 years.

of capital were recorded. The Riksbank increased the overnight rate by six percentage points in early December. The pressure on the krona stopped and interest rates could gradually be brought down as the foreign exchange reserves were restored. The Riksbank also let the increased demand for kronor spill over into an appreciation of the krona/ecu rate towards the central parity; cf. Diagram 6.

These events made the Riksbank reconsider its guidelines for exchange rate movements within the band and, more generally, the importance assigned to interest rate smoothing. Meeting swings in the demand for krona assets with movements within the band and sterilized interventions, rather than interest rate adjustments, may in some circumstances have adverse effects. For example, the weakness of the krona at the time of the Finnish crisis may have contributed to investor uncertainty. In addition, the initial sterilized interventions made when the krona came under pressure delayed the interest rate response. It is also conceivable that market participants had interpreted the attempts to keep domestic interest rates down as indicating increased emphasis on short-run (employment) goals, at the expense of the long-run (exchange rate/price stability) target. By letting interest rates rise earlier, the Riksbank may have been able to avoid such a drastic hike of the overnight rate. It seems fair to say – of course, with the benefit of hindsight – that the Riksbank underestimated the risks of contagion from the Finnish devaluation. Arguably, it was "irrational", for the reasons mentioned above, to draw parallels to Finland, but a central bank defending a fixed exchange rate must respond to swings in market sentiments even if they are considered ill-founded.

The December events indicated that devaluation expectations and capital flows had become more sensitive to the position of the exchange rate within the band. This destroys the trade-off between exchange rate and interest rate levels and variability in a target zone.²¹ The Riksbank's practical conclusion was to limit exchange rate variability within the band.²² The other side of this policy was that the Riksbank was willing to respond earlier with changes in the overnight interest rate to swings in the demand for kronor. Thus, the effective degree of sterilization of foreign exchange market interventions declined.²³

These policies were tested in April 1992, when – due to a shift in market sentiment of unclear origin – the Riksbank during a single day had to sell

21) See Svensson (1992) for a study – with applications to Sweden – of the trade off between exchange rate and interest rate variability in an exchange rate target zone.

22) This is similar to the target zone policy pursued in Norway since late 1988; cf. Mundaca (1990).

23) The Riksbank's intervention policy and its implications for the basic target zone model are studied by Lindberg and Söderlind (1992a).

foreign currency corresponding to 22 billion kronor to defend the krona/ecu rate. The following market day the overnight interest rate was raised by two percentage points. This led to an immediate reflow of currency and within days market interest rates were back to or – in the case of long-term rates – even below levels recorded before the outflows started.

This policy change can be seen as a continuation of the reforms during 1980s, such as the narrowing of the band and the introduction of the interest rate scale, resulting in a decline in exchange rate variability.²⁴ In parallel, there was less smoothing of interest rates at the very short end of the term structure. This implied that Sweden came closer to the textbook case of fixed exchange rates, losing the ability to influence the level as well as the variability of interest rates. However, it did not necessarily follow from this policy shift that the *ex post* variability of, for example, the three-month rate would rise. By letting the overnight rate respond more rapidly to swings in capital flows, the Riksbank hoped to prevent speculative attacks and reduce the likelihood of interest rate shocks of the type seen in December 1991.

3.6 The collapse of the fixed exchange rate regime

The situation for the krona was stable during the late spring and summer 1992 with the marginal overnight rate at 11.5 and 12 percent. However, the deterioration of the real economy continued with output falling and unemployment rising to record levels. Moreover, the budget deficit was revised upward with each new forecast. Part of this was business cycle related, but it was becoming clear that there was also a substantial structural deficit; cf. Diagram 5. Concerns for the sustainability of the budget were being voiced. At the same time, the support for radical consolidation measures in the parliament appeared uncertain.

It was in this environment that, in late August, a slow and steady capital outflow began. The Riksbank responded by raising the overnight rate by one percentage point, but outflows continued. The marginal rate was then increased from 13 to 16 percent and small reflows were recorded.

On September 8th, when markets were about to open in Stockholm, Finland announced that the markka would float. The krona immediately came under pressure. The Riksbank raised the overnight rate to 24 percent in the middle

24) See Lindberg and Söderlind (1992b) for data on exchange rate variability and other statistics on the krona exchange rate.

of trading. This level was insufficient to stop the outflows, however, and the following morning the marginal rate was increased to 75 percent. It was also announced that the Riksbank would borrow the equivalent of 16 billion ecus in foreign currencies to strengthen the foreign exchange reserves and would be prepared to borrow another 15 billion ecus if necessary. The krona market stabilized, but at the same time the tensions were rising in Europe. During the weekend, the ERM countries made a realignment (involving an effective 7 percent devaluation of the lira) and the Bundesbank announced that it would lower interest rates. Hoping that tensions would ease, the Riksbank brought the overnight rate down to 20 percent and during the first day it seemed that a stabilization was under way. However, on September 15th the turmoil began all over again. The overnight rate was increased to 75 percent in the morning of the 16th, but there was chaos all over Europe's currency markets, Sweden's included. The Riksbank took the extreme measure of raising the overnight rate to 500 percent. Italy and the U.K., under similar pressures, decided to float their currencies.

A 500 percent interest rate is not sustainable even if applied only to the overnight rate. However, by making it extremely expensive to go short in kronor, it achieved its goal, namely to stop the speculative outflows. Thereby, the Riksbank bought time for the government and the opposition to finalize a crisis package, primarily designed to reduce the budget deficit, as mentioned above, one of the major factors behind the concerns for the stability of the Swedish economy.

After four days at 500 percent, it was possible to lower the overnight rate, first to 50 percent and then to 40 percent the following week. However, the currency markets were still unstable. The government and the opposition presented a second joint proposal, this time designed to improve the competitiveness of Swedish industry through a fully financed cut in pay-roll taxes. The repeated demonstration of the political will to take fiscal measures to come to terms with the economic imbalances improved market sentiment and the Riksbank could gradually reduce the overnight rate to the pre-crisis level, 11.5 percent.

The step to hike the overnight interest rate to 500 percent proved sufficient to prevent continued outflows. However, in contrast to experience from previous, less severe crises, there were quite limited reflows, despite the extreme interest rate differentials. This may be attributed to lingering exchange rate uncertainty, but it is relevant to consider also the effects of interest rate shock.

Undoubtedly, the September events changed the perception of what the peak interest level might be. The interest rate volatility in connection with currency crises makes fixed income securities seem more risky, irrespective of the

perceived risk of an exchange rate change. This is problematic if, as in the Swedish case, the circumstances in which the currency crisis arose remain or reappear. Investors may stay away from the domestic currency out of fear for a renewed interest rate shock or, what amounts to the same thing, because they expect to make profits by buying krona assets after interest rates have been raised to levels from which they are bound to fall back again. Thus, for currency outflows to arise it may be sufficient that investors expect that the central bank will be compelled to raise interest rates. In this regard, having a strong reputation for being willing to go to great lengths to defend the exchange rate may in effect be destabilizing. In principle, an increase in market interest rates unrelated to any change in the fundamental evaluation of the krona could be sufficient to set off self-fulfilling expectations of a currency crisis. If investors interpret the change as a signal that others have revised their expectations they may, especially in a generally uncertain environment, choose to move in the same direction.

It was awareness of these mechanisms that made the Riksbank try to counteract disturbances that could put upward pressure on market interest rates during October and November. For example, attempts were made to make the money market function more smoothly and to help investors cope with interest rate risks related to year-end effects. However, in mid-November, the market interest rates started to rise from their bottom level after the September crisis. As expected, the krona came under substantial pressure and the Riksbank responded with sterilized interventions. The first rounds of outflows came from domestic investors. Once the process came under way, foreign investors jumped on the bandwagon and outflows increased even further. On November 19th, the Riksbank increased the overnight rate to 20 percent, but the pressure did not ease. The Riksbank had then lost over 160 billion kronor of the foreign reserves in six days. The ability to use further increases of the overnight rate to defend the fixed exchange rate were considered as exhausted. In the afternoon of November 19th, the Riksbank announced that the krona was floating.

During the following weeks, the krona fell significantly in value. By year-end, it had depreciated approximately 15 percent relative to the ecu. As Diagram 3 shows, this implied that the real effective exchange rate was at the same level as immediately after the 1982 devaluation. The depreciation is a cause for concern for future price developments, but Swedish policy makers have continued to emphasize the importance of the long-term price stability target. Monetary policy will be conducted in such a way that an increase in the price level resulting from higher import prices will not be transmitted into a permanent rise in inflation.

3.7 On the feasibility of fixed exchange rates

The Swedish experience can be said to confirm that the ability to use high interest rates to defend a fixed exchange rate is exhaustible, especially if the fundamentals are weak to begin with. Persistently high and volatile interest rates have detrimental effects on the real economy and on the financial sector. In order to succeed with this kind of policy, it is important, perhaps necessary, that the conditions giving rise to the crisis disappear. In the Swedish case, policy makers were not so lucky. The fiscal measures taken proved insufficient to allay the concerns for the government budget, the recession continued to deepen, etc. The experience from September, when several currencies were brought down by speculative attacks, and remaining tensions on the international foreign exchange markets contributed to the uncertainty. In such circumstances, a speculative process is likely to come under way. The central bank is then limited to making sterilized intervention. Given the potential size of capital flows this is a weak instrument that, unless the speculative process is broken by some "good news", can only delay the collapse of the exchange rate regime.

This does not warrant the conclusion that the actions taken to defend the krona in September were in vain. First, they included budgetary changes that were necessary irrespective of the exchange rate regime. Second, the decisiveness with which the krona was defended can be expected to influence the perception of policy in the new regime, that is the credibility of the low inflation target is presumably stronger than if the fixed exchange rate had been abandoned without a fight.

The difficulties in maintaining exchange rate pegs encountered by Sweden and other European countries have led some commentators to raise doubts about the feasibility of fixed but in practice adjustable exchange rates. Although documenting the difficulties that may arise in such a system, the experience in the Swedish case does not warrant such a pessimistic conclusion. The speculations against the krona were conditioned by fundamental imbalances in the Swedish economy, in particular the structurally weak budget position in an economy also hit by a deep recession, not by random events. Rather than indicating that fixed exchange rates are impossible to maintain, the events in Sweden (and elsewhere) in the fall of 1992, the major lesson for a hard currency strategy based on a fixed exchange rate seems to be the importance of keeping the economy on a balanced path. For policy makers this implies that the constraints imposed by the chosen exchange rate regime, both on all parts of economic policy and on overall economic developments, will have to be observed more rigorously, also in the short and medium term. In the Swedish case, it was the failure to keep the economy on a balanced path and to pursue

budgetary policies seen to be consistent with the requirements of a fixed exchange rate that created the environment in which the international foreign exchange market turbulence was sufficient to bring the krona down.

4. Some observations on central bank behaviour

In this section, we will try to broaden the perspective by using the Swedish experience from the struggle to establish the krona as a hard currency as a basis for some observations on the behaviour of the Riksbank. Both in the policy strategies pursued and in the institutional adjustments, it is possible to identify characteristics with general relevance for positive analyses of central bank behaviour. Our review can be seen as a complement to Bernanke and Mishkin's (1992) case studies of six central banks working under flexible exchange rates.²⁵

4.1 Policy making

The first observation is that the Riksbank – like all central banks – is concerned with more than one target variable. At the level of ultimate targets, inflation dominates. Instances when the Riksbank has put weight also on output can be identified, but it is significant that the price stability target has become more important over time. In the short term, the fixed exchange rate – an intermediate target established to help achieve the ultimate target(s) – has been the most important variable, but the Riksbank has also been concerned with the behaviour of interest rates, including the instrument variable, the overnight rate. A second characteristic that the Riksbank shares with other central banks is a preference for continuity – smoothness – in all its targets. This is seen most clearly in the techniques used to smooth interest rates and exchange rates, in the latter case primarily using sterilized interventions.

With just one instrument available, it is impossible to meet all targets at all times. Consequently, the Riksbank has from time to time been forced to make trade-offs between its targets, for example, between the exchange rate and a smooth path for interest rates. In this context, it is important to recognize that a central bank rarely, if ever, commits itself in a strictly binding way concerning any of its target variables. In the Riksbank's case this is illustrated by the exchange rate target zone and by the revocability of the exchange rate peg.²⁶ As noted in section 3, a target zone makes it possible to let the exchange rate

25) This section is also inspired by some thought-provoking remarks by Marvin Goodfriend at the conference "Transmission of Monetary Policy in Open Economies" at Studienzentrum Gerzensee, March 19-20, 1992. See also Goodfriend (1992).

26) The ERM has the same characteristics. It can be noted that European monetary union, with its common currency, would lead to an unprecedented degree of central bank commitment, as the members would agree to link their exchange rates irrevocably (short of secession from the union).

absorb disturbances that otherwise would have their entire impact on interest rates. Depending on the width of the target zone, an appreciation within the band may also be made to offset excess demand pressures, i.e., the central bank can use the target zone to trade off (short-term) exchange rate stability against the ultimate targets of price and output stability.²⁷

By abstaining from strict commitments, the central bank makes room for short-term discretion. The distinction between the short and the medium or long run is crucial for discretion to work. A case in point is the use of the target zone to smooth nominal interest rates. This mechanism presupposes that agents expect the exchange rate to display mean-reversion. Assuming that the entire target zone is used, the average exchange rate (measured over sufficiently long periods) must therefore equal the target value. Although not based on a strict commitment, the fixed exchange rate is still a binding constraint in this average sense. Bernanke and Mishkin (1992) refer to this type of behaviour, which they find to be very common in the central banks' use of monetary targets, as a "hybrid strategy", characterized by discretion in the short run, but constrained by rules in the long run.

The absence of commitments creates trade-offs that can be exploited in a purposeful way. It is purposeful in the sense that the weights assigned to the different targets depend on the perceived urgency of rectifying a deviation from some desired position. The importance of a target may depend on the economic situation. In a boom, for example, the fixed exchange rate target may "look after itself", allowing the central bank to use interest rate policy partly for other purposes, as in the 1988-89 period in Sweden.

One drawback of the absence of binding rules is that the central bank is forced to signal its intentions in more indirect ways. If these signals are misinterpreted, for example, because a secondary target is given priority, doubts about the validity of the commitment to the ultimate target may arise and the central bank is faced with a "crisis".²⁸ Then a drastic shift of attention to the ultimate target must be made. In the Swedish case, this is illustrated by the interest rate shocks made to defend the fixed exchange rate, in some case when disturbances occurred in connection with periods of interest rate smoothing.²⁹

27) Korkman and Åkerholm (1991) point out that this form for monetary policy independence may be a reason to work with a relatively wide band provided that overall credibility can be maintained.

28) Goodfriend (1992), discussing the U.S. experience, refers to such a situation as an "inflation scare".

29) Bernanke and Mishkin (1992) cite the shift in U.S. monetary policy in October 1979 as an analogous drastic switch from interest rate smoothing to the inflation target.

At the level of the ultimate target and partly beyond the realm of the Riksbank, the disinflation that Sweden has recently experienced can be interpreted in similar terms. The discretion exercised when inflation got out of hand in the 1980s – not least as a result of the failure to adjust fiscal policies to domestic demand developments – sowed doubts about the commitment to price stability, making a drastic turn-around necessary. This was inevitable, but it has made actual inflation fall far below expected rates, with adverse real effects and medium-term costs in the form of output instability.

The Swedish experience also illustrates that the smoothing ambitions inherent in the fixed exchange rate in some circumstances can be difficult to reconcile with price stability. For example, a revaluation of the krona in, say, 1985, would have reduced excess demand and, perhaps, held back inflation, helping to keep the krona on the hard currency course. However, it is not so obvious that such a managed exchange rate policy would have been advisable seen in a wider perspective. When the fixed exchange rate is the most visible part of the hard currency strategy, any deviation, even in an anti-inflationary direction, could be misinterpreted as a return to a "manipulative" policy. This would have raised the perceived risk of future devaluations, with detrimental long-term effects. In the absence of some other (credible) commitment to price stability, the fixed exchange rate takes on an importance not normally accorded to an intermediate target.

4.2 Institutional arrangement

The process reviewed in this paper has gradually tightened the constraints on policy makers. Market deregulation and integration have set forces in motion that leave little room for discretion or even hesitation.³⁰ In these circumstances, it is essential, first, to have flexible policy instruments and to use them in such a way that potentially destabilizing disturbances can be contained. Second, to prevent disturbances from arising, ambiguities in the policy targets must be eliminated. The common theme in the Swedish institutional reforms is the ambition to devise such a system.

The Swedish institutional reform process has several interesting characteristics. First, it is marked by an overall ambition to maintain as much scope for discretion and for smoothing as possible, subject to the constraint that credi-

30) As an illustration, we can compare the cumulative loss of foreign exchange reserves of less than 10 billion kronor during the first five months of 1985 – then considered a serious crisis – with the 22 billion recorded in one single day in April 1992 or the 160 billion during the last six days of the fixed exchange rate regime.

bility is not impaired. This is consistent with the hybrid strategy outlined above. Second and related to the first point, the reforms have been made defensively rather than according to some planned scheme.³¹ Rules and practices creating scope for trade-offs between targets have thus been retained until they are found to be incompatible with the new environment. For example, the target zone was kept secret until the events in 1985 showed the risks involved. The same pattern is seen in the reduced emphasis on interest rate smoothing and in the decision to forgo the benefits of the currency basket.

In a sense, this indicates that the preference for continuity extends also to the institutional structure. This is certainly not unique. The idea of "optimal policy rules" derived once and for all, starting with a clean slate, is patently unrealistic. Rules and institutions develop gradually, in an interplay with the changing (internal and external) environment. This is not always a well-charted process and – not least with the benefit of hindsight – it is often possible to point to instances when changes could have been made earlier. However, interpreted as an attempt to retain scope for a hybrid strategy, it is rational not to give up more discretion than necessary. Under a hybrid strategy, making binding commitments is a means to an end, not something done for its own sake. If the same degree of stability of expectations can be achieved without commitments, there is no reason to forgo the option to exercise discretion. It must be acknowledged that the optimal degree of commitment cannot be determined on theoretical grounds and that empirical information is also of limited value. Many of the arguments in this area tend to be counterfactual – "This would never have happened under a different set of rules!" – statements that can be neither proved nor disproved.

Inertia in policy reform follows also from another principle readily and, considering the uncertainty described above, perhaps sensibly adopted by real world policy makers. Laidler (1993, p. 352) expresses it succinctly: "In matters of policy, it is more important to be right than original." Not least given the difficulty in determining – *ex ante* or even *ex post* – what is "right" in matters of economic policy, sticking to what you have until it is seen to be "wrong" is often a natural strategy.

More generally, it must be acknowledged that virtually all human activities work on the principle expressed vernacularly as: "If it ain't broke, don't fix it." In formal economic terms, this is captured in adjustment cost models, in which changes are made only if the deviation from the desired position exceeds

31) One exception to this pattern is the deregulation process.

a certain threshold, so called (S,s) models.³² We conjecture that economic policy makers – just like other decision units – face (non-convex) adjustment costs of various kinds, making it rational not to respond instantaneously to shocks.³³ Many observations on central bank behaviour are consistent with this hypothesis. It could, for example, explain interest rate smoothing in settings where interest rates are used as instruments.

It should be added that policy adjustments, in particular those involving institutional reforms, typically are significantly more complex than those described in conventional adjustment cost models. For example, the "desired position" in terms of the institutional structure may often be impossible to determine, as the success of a reform will depend, among other things, on the expectational responses of the private sector. In these circumstances, the policy maker may be acting under pure uncertainty. Complex though they may be, it seems to us that a worthwhile task for positive analyses of economic policy making – potentially with normative implications – would be to try to understand the nature of such adjustment costs.

It is beyond the scope of this paper to attempt either a positive or normative analysis of these behavioural characteristics. However, taking the difficulty of achieving change as an empirical fact, what we find most striking in the Swedish development over the past ten years is the extent to which the basic premises of monetary policy decision making have been changed. Perhaps it is in the willingness to adjust policies and institutions that have turned out to be irreconcilable with the aim of maintaining credibility of the fixed exchange rate that the strongest evidence of the commitment to the krona as a hard currency is found.

32) See, e.g., Caballero and Engel (1992).

33) This is not to say that this behaviour is necessarily fully optimal in a normative sense. The costs may, for example, be related to public choice aspects or inefficient agency relations between the policy maker and the electorate.

5. Concluding comments

The Swedish krona was a "soft" currency in the 1970s and early 1980s, with persistent high inflation accommodated by repeated devaluations. An attempt to break with these patterns was made in the early 1980s. However, policy makers only gradually realized the requirements – in terms of actual policies and commitments – of a successful hard currency policy. This contributed to bringing the krona off the hard currency course, but as the problems became evident, policy makers were willing to adapt. A real depreciation of the krona was under way during 1992, as Swedish inflation has fallen below the average (ecu-weighted) EC rate. This is how a hard currency responds to an inflationary period. However, the adjustment came too late, and in too turbulent an environment, to make it possible to defend the fixed exchange rate.

The Riksbank has strongly emphasized that the collapse of the fixed exchange rate regime does not mean that the ultimate target of monetary policy has changed. To this end, the governing board at the Riksbank has announced that price stability remains the overriding objective for monetary policy under the flexible exchange rate. In the absence of an explicit intermediate target, the ultimate target has thus been given greater prominence. The Riksbank has specified that the objective of monetary policy is to limit the annual increase in the consumer price index in 1995 and onwards to 2 percent (± 1 percentage point).³⁴

The Swedish experience illustrates the difficulties of achieving credibility. Adjustments of policy institutions and practices of the type made throughout the period is one essential element in this process. However, important though they may be, the institutional rules just make up the skeleton of economic policy. By adjusting institutions, policy makers can signal their intentions, but in the end it is the decisions made – or not made – that determine the outcome.

In this paper we have focused on monetary and exchange rate policy. However, the Swedish experience also illustrates that credibility of a hard currency strategy cannot be based entirely on monetary and exchange rate policy and the institutional framework governing the central bank. This is obviously the case under fixed exchange rate, but also in a flexible rate system fiscal policy matters for inflation. In particular, it is inevitable that budgetary developments

34) For a review of some of the issues facing Swedish monetary policy in the new flexible exchange rate regime, see Sveriges Riksbank (1992).

play a role for the expectations of long-term economic policies and future inflation. Sweden, in common with a number of other industrialized countries, currently has substantial budget deficits. It has become clear that many countries have structural deficit problems that will not go away when the recession is over. This situation is, by definition, not sustainable, i.e., current paths for expenditures and incomes are inconsistent with the intertemporal government budget constraint.³⁵ It is inevitable that the elimination of the structural components of the deficits is an important part of the continued efforts to establish the currencies of future as well as current EC countries as hard currencies also in a long-term perspective.

35) See Blanchard et al. (1990) for a discussion of conceptual and empirical issues related to sustainability problems.

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Diagram Appendix

Diagram 1: Unemployment. Monthly unemployment from January 1975 to December 1992 and unemployment including labour market measures from January 1976 to December 1992. Source: Statistics Sweden.

Diagram 2: Inflation (year-on-year). For Sweden and Germany from January 1973 to December 1992. A "reference" inflation rate, defined as the weighted inflation rate of the trade-weighted currency basket and from May 1991 onwards ecu-weighted, is also plotted for the period September 1978 to October 1992. Source: International Financial Statistics (IFS), OECD, Sveriges Riksbank.

Diagram 3: Real effective exchange rate. Monthly figures from January 1975 to December 1992, based on a measure of relative unit labour cost. Source: IFS.

Diagram 4: Growth rate real GDP. From 1973 to 1992. Source: National Institute of Economic Research and Statistics Sweden.

Diagram 5: Central government budget. From 1973 to 1992. Expressed as percent of GDP. Source: Statistics Sweden and Ministry of Finance.

Diagram 6: Exchange rate. The deviation of the Swedish currency index from central parity. Daily data from January 1982 to November 19th 1992. The exchange rate band is marked with horizontal lines. The devaluation 1982, the announcement of the ± 1.5 percent band and the ecu peg are marked with dotted vertical lines. Source: Sveriges Riksbank.

Diagram 7: Interest rate differential (expressed as annualized rates of return) between Swedish krona Euro-deposits and basket-currency Euro-deposits carrying a fixed maturity of three months. Daily data from January 1982 to November 19th 1992. The devaluation 1982, the announcement of the ± 1.5 percent band and the ecu peg are marked with dotted vertical lines. Source: The Bank for International Settlements (BIS) and Sveriges Riksbank.

Diagram 8: Forward exchange rate, three months. The forward exchange rate in terms of the basket currency, expressed as percentage deviation from central parity. Daily data from January 1982 to December 1985. The boundaries of the exchange rate band are marked with dotted horizontal lines. The devaluation 1982 and the announcement of the ± 1.5 band are marked with dotted vertical lines. Source: BIS and Sveriges Riksbank.

Diagram 9: Expected rate of devaluation, three months. 100 percent and 90 percent confidence intervals. Daily data from June 27th 1985 to November 9th 1992. The ecu peg and the Riksbank's announcement of stronger preferences for exchange rate stability within the band in May 1992 are marked with dotted vertical lines. Source: Lindberg et al. (1993).

Diagram 10: Interest rates. One-month Euro-deposits denominated in Swedish kronor and five-year government bonds, expressed as annualized rates of return. The ecu peg and the shift to flexible exchange rates are marked with dotted vertical lines. Daily data for the period January 1990 to December 1992. Source: BIS and Sveriges Riksbank.

Diagram 1 Unemployment

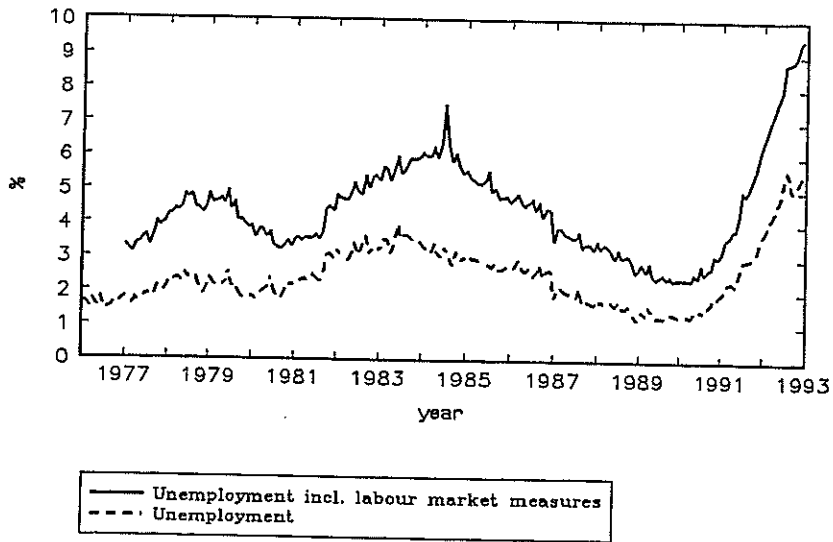


Diagram 2 Inflation (year-on-year)

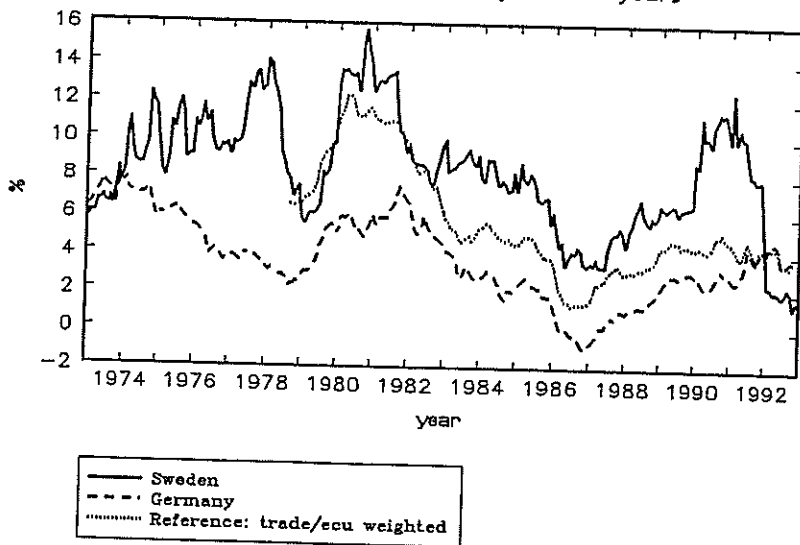


Diagram 3 Real effective exchange rate

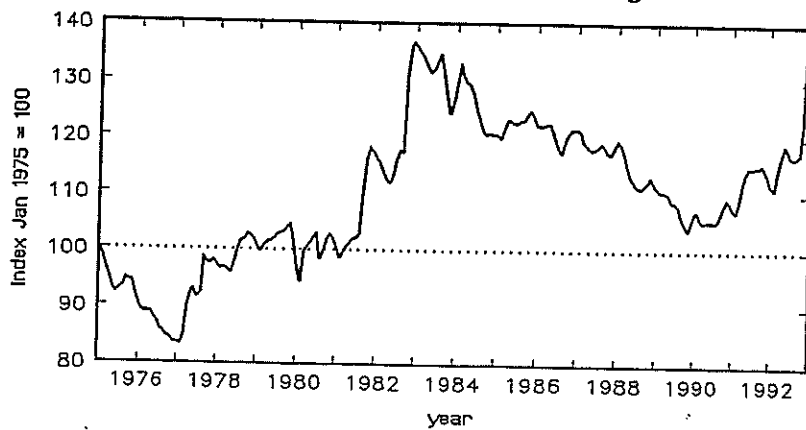


Diagram 4 Growth rate real GDP

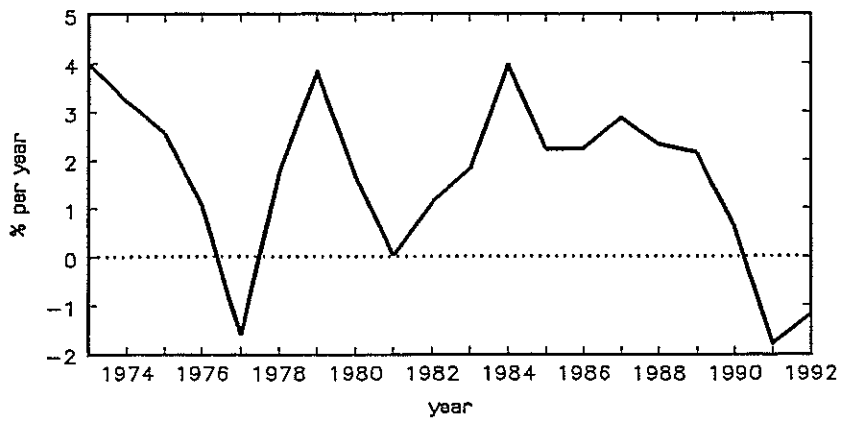


Diagram 5 Central government budget

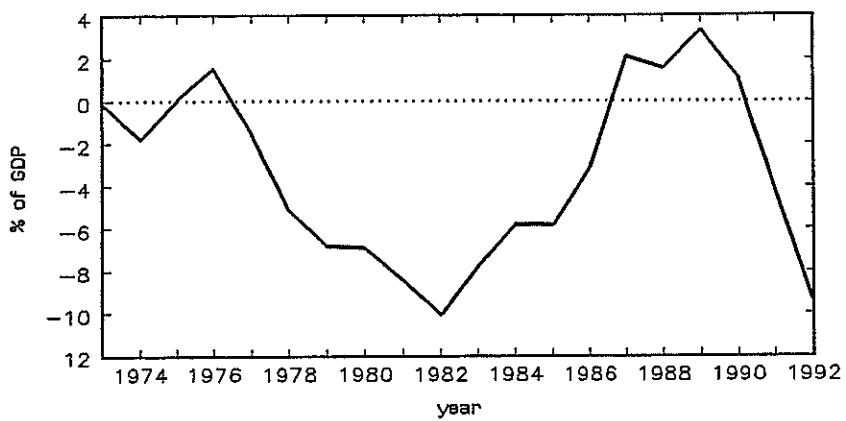


Diagram 6 Exchange rate

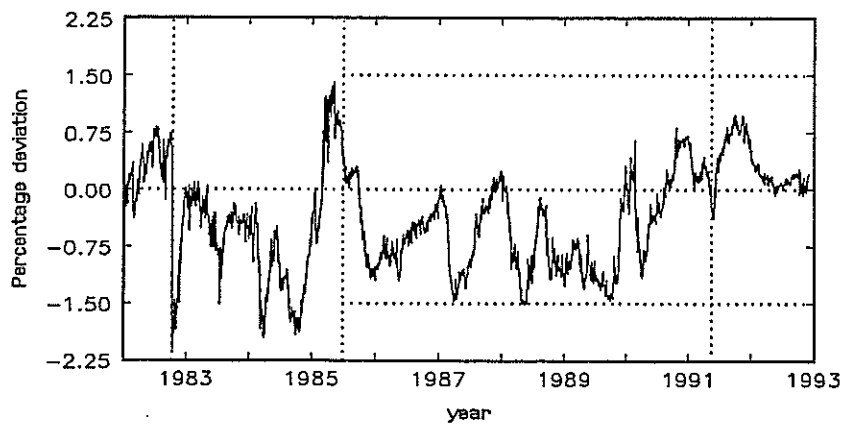


Diagram 7 Interest rate differential: 3 months

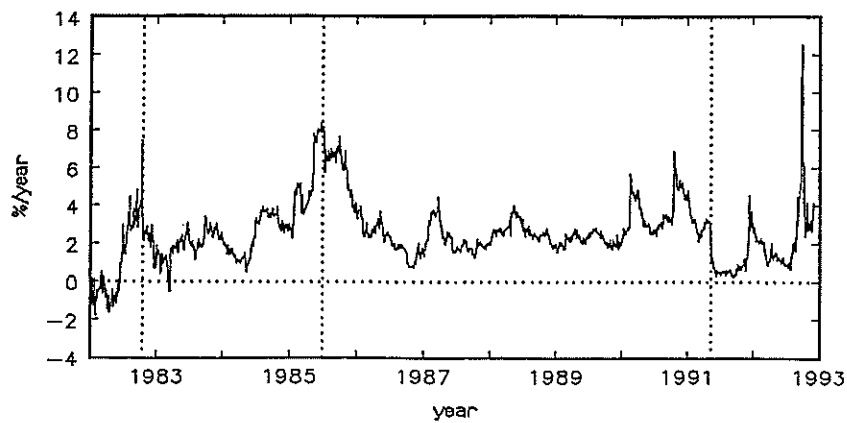


Diagram 8 Forward exchange rate: 3 months

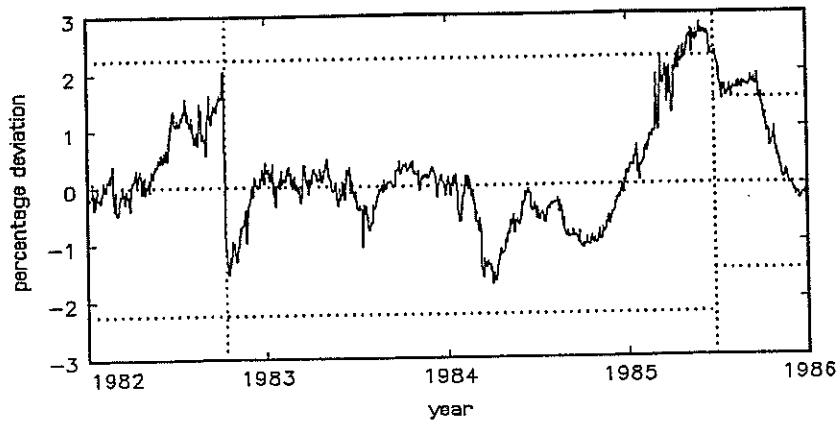


Diagram 9 Expected rate of devaluation: 3 months
100% [thin] and 90% [thick] confidence intervals

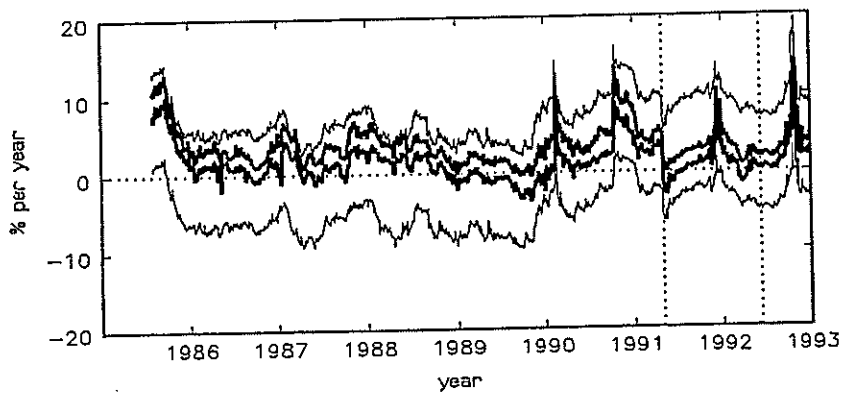


Diagram 10 Interest rates:
1-month [thick] and 5-year [thin]

