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## Monetary policy in Sweden after the end of Bretton Woods

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### Abstract

This paper discusses how monetary policy in Sweden has evolved since 1973. We provide a chronology of the different monetary policy regimes in place during the past fifty years and identify two main regimes, the pegged-but-adjustable exchange rate regime (1973 – 1992) and the inflation targeting regime (1993 – 2022). Inflation in Sweden has been more stable under the inflation targeting regime than under both the Bretton Woods system, and the pegged-but-adjustable exchange rate regime. GDP growth was higher and more stable during the Bretton Woods System. We argue that inflation targeting was implemented according to the simple text book version only during a short period, 1999-2007. We illustrate that economic developments in Sweden have in many respects been similar to that of Denmark. Lastly, we identify and discuss recurrent themes in the discussions of monetary policy under inflation targeting.

*Keywords:* monetary policy, inflation targeting, exchange rate regimes

**JEL codes:** E42, E52, E58, E65

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## 1. Introduction

This paper analyses how monetary policy has evolved in Sweden since 1973. Our analysis uses different approaches. In section 2, we provide a chronology of monetary policy regimes during the past fifty years to provide background for both the comparative analysis, and the discussion of key themes that follows in sections 3 and 4 respectively. The conduct of monetary policy in Sweden after the break-down of the Bretton Woods system consists of two clearly distinct regimes: the pegged, but adjustable, exchange rate regime during 1973 – 1992, and the regime with inflation targeting and a floating exchange rate from 1993 and onwards. We divide these two main regimes into different phases, as macroeconomic policy of course was changed gradually and only rarely abruptly. For instance, the regulations of financial markets prevailing during the Bretton Woods regime were lifted during the second half of the 1980s. The Riksbank then gradually became more independent both before and after the inflation target was announced in January 1993.<sup>2</sup> As regards fiscal policy, the early trendwise increases in the budget deficit after the end of Bretton Woods were reversed after 1982, but the crisis 1990 – 1993 led to new deficits.<sup>3</sup> Reforms of fiscal policy were implemented during the 1990s. The monetary policy regime has been relatively stable after the shift to inflation targeting in 1993, although a new central bank act came into effect from January 1999. The practical implementation of inflation targeting has changed over time however, in particular during the 21<sup>st</sup> century as a result of experiences and economic crises. An important finding in section 2 is that the inflation targeting regime has only been implemented according to the simple text book version during a relatively short period, 1999 – 2007.<sup>4</sup> Subsequently, monetary policy has dealt with challenges and instruments not originally viewed as part of the inflation targeting framework. Another important observation is that the inflation targeting strategy has been remarkably successful when it comes to stabilizing inflation expectations.

In section 3, we compare the economic development in Sweden across the two regimes and the Bretton Woods period as well as with other countries' experiences. Inflation has been more stable and less volatile under inflation targeting, compared to both the Bretton Woods regime and the pegged-but-adjustable policy. Real GDP growth was however higher and more stable during the Bretton Woods period. The high growth then probably partly reflected a catching-up process after the second world war, but the stability also reflected an absence of financial crises under the Bretton Woods rules. Public debt was highest during the pegged-but-adjustable regime but household debt has increased rapidly during the inflation targeting regime. Employment fell drastically in the early 1990s but has gradually recovered since then – see Figure 8. It is particularly interesting to compare the economic development in Sweden with that of Denmark, where the exchange rate has been fixed, first to the German D-mark and then to the euro. The developments in Sweden and Denmark are in many respects similar.

Finally, in section 4, based on the chronology, we stress some recurrent themes in discussions about monetary policy under inflation targeting, for example: How should the inflation target be defined? What is the relative importance of demand and supply shocks? What are the implications for monetary policy of financial instability and exchange rate variability?

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<sup>2</sup> See Heikensten and Vredin (1998, 2002).

<sup>3</sup> See Ohlsson and Vredin (1996).

<sup>4</sup> When we refer to the simple text book version of inflation targeting, we have classic descriptions as in e.g. Svensson (1997) and Clarida et al. (1999) in mind.

A brief summary and conclusions are presented in section 5. Overall, our assessment is that the adoption of inflation targeting as a monetary policy regime in Sweden has been very successful when it comes to achieving its main objective: to stabilize inflation and inflation expectations.

It should be emphasized that the approach in this paper is descriptive. We do not interpret our observations using any specific model or make any explicit identifying assumptions that would have enabled us to claim that we have found any causal relations. In consequence, we cannot evaluate or make recommendations about policy. Nonetheless, we believe that our descriptions are informative and can be used as inspiration for future and more thorough research.

## 2. Stabilization policy regimes in Sweden since 1973: a chronology

In this section, we describe important features of stabilization policy after the collapse of Bretton Woods in terms of four phases. We focus primarily on monetary policy, but sometimes a broader perspective on stabilization policy is needed. Two phases are around ten years long each and together cover the pegged but adjustable exchange rate regime. Phase I was characterized by high inflation and devaluations. Phase II contained ingredients that led to the financial crisis in Sweden 1990 – 1993. The next two phases are fifteen years long each and cover the inflation targeting regime. Phase III involved the establishment of credibility for the new policy regime. Phase IV has been characterized by unexpected policy measures, as the Riksbank (as other central banks) has been forced to handle unusual circumstances.

The last thirty years (last two phases) are described in much more detail than the previous twenty years (the first two phases).<sup>5</sup> Compared with the Bretton Woods period, the pegged but adjustable exchange rate regime was characterized by “stagflation”: higher inflation and low GDP growth. The inflation targeting regime was, until 2022, characterized by the lowest and most stable inflation of the fifty year period. Nonetheless, GDP growth was higher and more stable during the Bretton Woods era. Quantitative comparisons of the macroeconomic outcomes for the different regimes, and comparisons with some other countries, are presented briefly in Section 3. Some challenges for the inflation targeting regime, especially since the global financial crisis (GFC) 2008 – 2009, are discussed in Section 4.<sup>6</sup>

### 2.1 Phase I, 1973 – 1982: Recurrent devaluations

The aim of macroeconomic policy during this period was full employment. Fiscal policy resulted in a growing public sector, government deficits and a growing public debt. The target for monetary policy was still a fixed exchange rate, but the target was changed through several devaluations of the currency. Financial markets continued to be heavily regulated.

There was a persistent increase in inflation between 1968 (average inflation rate of 2 per cent) and 1980 (inflation of 13.6 per cent). Apart from the more gradual development, the reasons were not different from the increase in inflation in 2022: external factors in the form of war and energy supply shocks, combined with the design of monetary and fiscal policy, both foreign and domestic. One reason for the breakdown of the Bretton Woods System was that the Vietnam war led to inflation and a balance of payments deficit in the US that made the fixed exchange rate between the US dollar

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<sup>5</sup> The reasons we focus more on the last thirty years are partly that the earlier period already has been covered in many descriptions, e.g. Jonung (1999, 2019), and partly that our own comparative advantages are in describing the more recent period.

<sup>6</sup> In this paper we use the abbreviation GFC for the global financial crisis, but it should be noted that many economists prefer to call it the great (rather than global) financial crisis, since it hit different countries to different degrees.

and gold unsustainable. And a reason behind the oil price shock in October 1973 (“OPEC I”) was the war between Israel and Egypt.

Using terms to define stabilization policy that have been developed since then, the regime prevailing in Sweden during the 1970s was characterized by fiscal dominance, active fiscal policy and passive monetary policy.<sup>7</sup> An important difference compared to stabilization policy in subsequent decades was however that during the 1970s, neither monetary nor fiscal policy aimed to stabilize inflation or government debt levels. Instead, the primary objective of macroeconomic policy was keep to unemployment low.<sup>8</sup> This objective was also achieved, at least in the short run. Labour market conditions remained strong from the early 1970s until the early 1980s, with unemployment running at below 2.5 per cent.<sup>9</sup> High inflation however worsened Sweden’s international competitiveness, so other measures of economic activity (such as manufacturing, and GDP) weakened.

The inflationary oil price shock (and worsening terms of trade) in late 1973 was not followed by contractionary stabilization policy. Fiscal policy instead led to persistent increases in the government budget deficit until 1982 and in public debt until 1988. A few observations suggest, however, that this development was not only a reflection of systematically active countercyclical policy.<sup>10</sup> First, there was a steady increase in the size of the public sector. Long term plans from the government forecasted a steady growth in both public expenditure and revenue irrespective of the development of the business cycle. Second, a large part of the cyclical adjustment of the budget deficit was due to automatic stabilizers, giving rise to, e.g., higher government revenue when GDP was increasing. High wage increases after the oil price shock thus led to higher government revenue (and a smaller budget deficit) than expected in 1975 – 1976. Third, the primary budget deficit did not increase after 1978; the continued increase in the budget deficit thereafter and until 1982 was due to increased interest payments on government debt. The outcomes of fiscal policy in terms of government revenue, expenditure and the budget deficit thus reflect many other mechanisms than active policy decisions aimed to keep unemployment down.

Turning to monetary policy in this phase, it is better described as “credit policy”. It had little resemblance both to monetary policy as it is implemented today, and to the models of monetary policy taught in macroeconomic textbooks from the 1970s (which were mostly describing the US system). Sveriges Riksbank administered a large set of regulations of both domestic credit conditions and capital flows to and from the rest of the world.<sup>11</sup> The regulations were initially introduced during World War II and then extended until the 1980s. They made it possible for the Riksbank, in close cooperation with the government and the National Debt Office, to control both prices (i.e. interest rates) and quantities on the financial markets. The regulations were used to steer savings to investments that were considered to have high priority, e.g. housing investments and the government’s financing needs.

The Riksbank had an operational framework for interest-rate setting and open market operations, in addition to the regulations. It consisted primarily of a discount rate and an associated penalty interest rate. The latter was set as a percentage point addition to the former, and was applied to commercial banks’ borrowing from the Riksbank when a bank’s borrowing reached a certain level of its equity. From 1973 to 1981, the discount rate was raised from 5 per cent to 12 per cent – see Figure 9 – and the penalty rate from 7 per cent to 17 per cent, i.e., broadly in line with the increase in inflation. But it was not inflation as such that initiated changes in the policy rates, but rather the goal to keep the exchange rate fixed. Since capital controls could not completely eliminate cross-border

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<sup>7</sup> Definitions of passive/active fiscal and monetary policy were introduced by Leeper (1991).

<sup>8</sup> Andersson (2021) labels the regime 1973 – 1992 “full employment”, while the regime since 1993 is labelled “norm policies”. Lars Jonung has also described the Swedish experiences in many reports, see Jonung (2019) for a recent example.

<sup>9</sup> There were of course variations in economic activity during the 1970s. But unemployment remained low compared to the levels experienced subsequently.

<sup>10</sup> See Frank et al. (1993) and Ohlsson and Vredin (1992, 1996).

<sup>11</sup> For descriptions and further references, see, e.g., Englund (2009, 2015) and Sellin (2018).

currency flows (due to trade and direct investments), the exchange rate target put limits on how much the levels of interest rates in Sweden could deviate from those in the rest of the world.

Regulations had to be tightened and interest rates raised in particular when there were expectations that the level of the fixed exchange rate would be changed. After the first oil price shock, Sweden's terms of trade deteriorated and the current account turned negative – see Figures 15 and 16. The exchange rate target was changed through devaluations five times 1976 – 1982.

The background for the need to maintain a target for the exchange rate was that Sweden had joined the so called European snake arrangement, initiated by the EEC countries and intended to stabilize exchange rates between European currencies when the Bretton Woods system broke down in March 1973.<sup>12</sup> The krona was first devalued by 3 per cent against the West German Mark in a realignment of European exchange rates in October 1976. After two further devaluations of 6 and 10 per cent in April and August 1977, Sweden left the snake agreement. A unilateral arrangement was set up, where the target became to keep the krona fixed against a trade-weighted basket of foreign currencies, including the US dollar. The current account (and the government budget) however continued to be in deficit and decisions were taken to devalue the krona by 10 per cent in September 1981 and by 16 per cent in October 1982. In total, from the beginning of 1973 to the end of 1982, the krona was devalued by 55 per cent versus the US dollar and 104 per cent versus the German Mark. The devaluation against a trade-weighted currency basket was 49 per cent.<sup>13</sup>

The pegged but adjustable regime thus involved several changes in the exchange rate target during the first decade after the breakdown of the Bretton Woods system. The fundamental reason for the devaluations were a poor interaction between fiscal policy, monetary policy and wage formation. The primary objective of stabilization policy was to keep unemployment low. However, nominal wages increased rapidly in response both to inflation impulses from abroad and expectations of an accommodative domestic stabilization policy. The reasons behind the increase in inflation in Sweden were thus similar to the factors driving inflation in other countries, a lack of credibility of the target for monetary policy, which in the case of Sweden was an exchange rate target.<sup>14</sup>

## 2.2 Phase II, 1983 – 1992: Towards a domestic crisis

During this period, financial market regulations were dismantled which led to a credit boom. This led to a banking and currency crisis when after-tax real interest rates increased as a result of both external shocks and domestic fiscal and monetary policy.<sup>15</sup>

The devaluations that occurred during Phase I caused an “undervaluation” of the krona, in the sense that the effective real exchange rate became around 30 per cent weaker compared to the end of the Bretton Woods period.<sup>16</sup> This contributed to a boom in the Swedish economy during the second half of the 1980s – see Figure 8 and Figure 13. The government budget deficit decreased and turned into a surplus during 1988 and 1989. The current account balance also improved.

Inflation decreased after the peak in 1980, and was lower during 1983 – 1992 than during the preceding decade. However, inflation was still high by historical and international standards, 6.3 per

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<sup>12</sup> This agreement was preceded by the Smithsonian agreement in 1971 aiming to limit the fluctuations in the exchange rates versus the dollar within a “tunnel”. European countries decided to put further limits on their bilateral exchange rates – a “snake in the tunnel”. The bands around the exchange rate targets were later called target zones.

<sup>13</sup> For long time series on exchange rates, see Bohlin (2010).

<sup>14</sup> Horn and Persson (1987) developed an open-economy version of the Barro-Gordon (1984) analysis of the inflation bias and the credibility problem. Edin and Vredin (1993) presented a model for the probability and size of devaluations using data from Sweden, Denmark, Finland and Norway.

<sup>15</sup> See Englund (1999, 2015) and Jonung and Stymne (1997). An important source for our descriptions of the development during the 1980s and 1990s is unfortunately only available in Swedish, Hörngren and Lindberg (2000).

<sup>16</sup> See Figure 2 for a comparison with the US, and Belfrage et al. (2023) for more comparisons and other measures of the real exchange rate.

cent per year on average, meaning that the price level doubled during this period. Inflation came down to 4 per cent in 1986 – 1987 but then increased again.

In addition to the undervalued real exchange rate, deregulation of the financial system contributed to the boom during the 1980s. For instance, restrictions on banks' lending and interest rates were lifted in 1985 and regulations of capital flows abandoned in 1989.<sup>17</sup> The deregulations do not seem to have been primarily ideology-driven or pro-active, but rather were adjustments to economic reality. For example, financial markets participants were able to circumvent the regulations, e.g. through finance companies that acted like "shadow banks" and through bilateral agreements outside the banking system (e.g., trade credits between non-financial firms, and direct loans from sellers to buyers in housing transactions, with banks acting as brokers). Another motive for the deregulations was the growing awareness that the costs of the regulations in terms of less efficient resource allocation increased as the general level of economic activity, trade and wealth continued to grow.

In 1984 the government decided that budget deficits should be financed only by domestic borrowing. This put upward pressure on domestic interest rates and stimulated both households and non-financial firms to borrow abroad. Although both fiscal and monetary policy officially aimed to keep inflation down, and partly via a fixed exchange rate, exchange rate risk was not negligible. Devaluations had earlier been a common way to counteract macroeconomic imbalances. But the deregulations and the increased competition between banks led to high credit growth and generally higher risk-taking, not only by banks but also by households and non-financial firms. Stock prices and house prices increased rapidly during the second half of the 1980s.

The boom peaked in 1989 – 1990. Then, GDP growth declined abruptly and stock and property prices fell. One reason was that interest rate costs increased, both because of the rise in European interest rates after the German unification and because of a Swedish tax reform that, among other things, lowered interest deductions (Englund, 1999). The tax reform and the deregulations of the financial system were examples of a more general reform program which also included a parliament decision in December 1990 to apply for membership in the European Economic Community.<sup>18</sup> In May 1991 the target for the krona in terms of a currency basket was replaced through a decision to peg the krona to the ECU, the European Currency Unit. It had been introduced in 1979 as a measure to guide the stabilization of European currencies against each other through the European Exchange Rate Mechanism, ERM. In contrast to the earlier devaluations, there was no significant change of the effective krona exchange rate in connection with this change of exchange rate target.<sup>19</sup>

In October 1990 the government decided to initiate a review of the Riksbank Act and the framework for monetary policy, in light of the recent deregulations of the financial system, the increased economic and financial integration with the rest of the world, and the international discussion about the importance for inflation of central bank independence. A committee was appointed in March 1991, but after the change in government following the election in September the same year, a new committee was announced in January 1992. The directives for the review were also changed at the same time, giving more emphasis to the need for central bank independence and the consequences of a Swedish EU membership. The belief in a stable trade-off between inflation and unemployment had gradually decreased with the stagflation during the 1970s and 1980s. The Riksbank's degree of independence had already been somewhat enhanced in 1988, but without any full review of the central bank legislation.<sup>20</sup> In 1991 the government declared that low inflation was an overriding goal

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<sup>17</sup> See Englund (2015) for more details about the development described here, and for further references.

<sup>18</sup> The reforms in Sweden followed an international pattern, but were also influenced by a critique from Swedish economists against the failed stabilization policies of the 1970s and 1980s. The Economic Policy Group (Konjunkturrådet) at SNS (Centre for Business and Policy Studies) was especially influential and argued that rules should replace discretion. Their arguments, in turn, were highly influenced by the critique against Keynesianism from Robert Lucas and others. See Jonung (1999).

<sup>19</sup> The weights in the target index were changed (and set to zero for non-EEC currencies, e.g. the US dollar and the Norwegian krone). The change also implied an objective to lower the variability versus every single currency in the index, since the currencies included were pegged to each other. See Nessén (1992).

<sup>20</sup> From 1988, the chairman of the Riksbank's Governing Board was no longer appointed by the government, but by the members of the Board itself. The Governor's term in office was changed from three years to five years.



for stabilization policy. In this sense, the change from the full employment regime to inflation targeting was a gradual process, and associated with several structural changes of the Swedish economy (see section 2.3.2 below)..

When the committee reviewing the Riksbank Act delivered its proposals (for further increased independence and an explicit price stability mandate) in February 1993, the conditions for stabilization policy in Sweden had however drastically changed and a regime change had already occurred. A banking crisis and a currency crisis enforced each other and the pegged exchange rate policy was abandoned on November 19, 1992.<sup>21</sup> The krona depreciated by around 20 per cent before the end of the year.

The banking crisis started with credit losses in a shadow bank (finance company) in the spring of 1990, and in the fall of that year three shadow banks defaulted. This led to increasing funding costs more generally, and the banking sector's credit losses increased during 1991 and 1992. The government took ownership of two of the big banks, and announced a general bank guarantee on September 24, 1992 (see Englund, 1999, 2015). The currency crisis was not limited to Sweden, as several European currencies were subject to attacks on their fixed exchange rates as their pegs were not believed to be sustainable. The Finnish Mark was devalued against its currency basket in November 1991 and started to float in September 1992. The UK and Italy left the ERM on September 16, 1992 ("Black Wednesday").<sup>22</sup> In order to defend the krona's pegged exchange rate, the Riksbank raised its policy rate significantly on several occasions, e.g., in October 1990 (from 12 to 17 per cent), December 1991 (from 11.5 to 17.5 per cent) and September 1992 (to 500 per cent!).<sup>23</sup> The high interest rates needed to defend the krona deepened the banking crisis, and the banking crisis reinforced the currency crisis by stimulating speculation against the krona. Since the private sector in Sweden had increased its reliance on foreign funding after the deregulations, it was heavily exposed to both liquidity and exchange rate risk.

Although the pegged exchange rate regime was able to keep the exchange rate stable for ten years, and inflation came almost down to 2 per cent in 1992, the regime was not sustainable. The initial "undervaluation" of the krona had gradually disappeared as the real exchange rate appreciated back to the level it had in the early 1970s.<sup>24</sup> Consumer prices had increased faster from the early 1980s than in other countries. The boom created by the devaluation in 1982 was one important factor behind the inflation. The deregulation of financial markets also contributed to the high economic activity, but eventually spurred a financial crisis. The financial (banking and currency) crisis was to some extent affected by international developments (the German unification, the ERM crisis), but since there was no global financial crisis domestic economic policies clearly were more important. Price stability did not, in effect, become a primary goal for stabilization policy until the late 1980s or even early 1990s. A new Riksbank Act did not come into effect until 1999, when the inflation targeting regime had already been established.

### 2.3 Phase III, 1993 – 2007: Establishing inflation targeting

As a fixed exchange rate apparently could not provide a nominal anchor, a regime shift in monetary policy was needed. The Riksbank announced an inflation target in 1993, and during the following decade new analytical and communicative tools were developed to enhance credibility of the new

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<sup>21</sup> For descriptions of the crises, see Ingves and Lind (1996) and Englund (1999, 2015).

<sup>22</sup> For a more detailed account of the European currency crisis, see Gros and Thygesen (1998).

<sup>23</sup> The system with a discount rate and a penalty rate, described in Section 2.1, was replaced by an "interest rate scale" in 1985, a step function for the overnight interest rate determining banks' borrowing rates as a function of their borrowing in relation to their equity. The Riksbank implemented open market operations to stabilize the 3 – 6 months money market rates at levels needed to defend the exchange rate target. Market rates did not reach 500 per cent in September 1992. See Sellin (2018) for a description of the operational framework, and Englund et al. (1989) for an analytical treatment.

<sup>24</sup> See Figure 2 and Belfrage (2021).

regime. Other structural reforms also contributed to the credibility of monetary policy, in particular new frameworks for fiscal policy and wage formation.

On January 15, 1993 the Riksbank announced an explicit inflation target. The bank's Governing Council had decided that the target for monetary policy, from 1995, would be to limit the annual increase in the consumer price index to 2 per cent, with a tolerance band of +/- 1 percentage point.<sup>25</sup> During 1993 and 1994 the focus of monetary policy would be to prevent that the inflationary impulse from the depreciation of the krona and changes in indirect tax rates, would lead to an increase in the underlying inflation rate. The decision to use an explicit inflation target as a new nominal anchor was influenced by experiences from New Zealand and Canada, where inflation targets had been introduced in February 1990 and February 1991, respectively.<sup>26</sup>

Inflation had already fallen from around 10 per cent in late 1990 and early 1991 to around 2 per cent by mid-1992. As a result of the banking and currency crisis, and the associated increase in interest rates, house prices had fallen by around 20 per cent between early 1992 and early 1993. Stock prices had fallen by around 50 per cent between the spring of 1990 and the fall of 1992, but had thereafter started to rise rapidly again. Unemployment increased rapidly during 1991 and 1992, from around 2 per cent to around 9 per cent, and wage increases declined, from around 10 – 12 per cent to 3 – 4 per cent. As a result of the crisis, general government debt increased again, to around 80 per cent of GDP.

### 2.3.1 Achieving credibility

During the first years of inflation targeting the Riksbank focused on developing new methods for analysing inflation that could provide a basis for interest rate decisions, and on establishing credibility for the new inflation target. It was clear that monetary policy with an inflation target had to be much more forward-looking compared to the fixed exchange rate regime and that inflation expectations had to be monitored. Svensson (1992) suggested how monetary policy could be based on indicators. A report on "Monetary Policy Indicators" was published in June 1993 and the first inflation report, "Inflation and Inflation Expectations in Sweden", was published in October. This report included, among other things, different measures of underlying inflation.<sup>27</sup>

Inflation increased during **1993**, but this was not surprising and could be expected to be temporary since it was associated with the large depreciation of the krona and increases in indirect taxes. Still, private agents' expectations about inflation a couple of years ahead were significantly above the target, partly because inflation had been around 10 per cent during 1990 and 1991 and on average 6.7 per cent 1983 – 1992.<sup>28</sup> So the Riksbank lowered the interest rate only gradually and continuously expressed worries about the development of the government's budget deficit and the increase in government debt as it could not be taken for granted that the years of fiscal dominance over monetary policy were over.<sup>29</sup>

Inflation returned to target in **1994** and the policy rate was gradually lowered afterwards, except for a period of rate increases from August 1994 to the end of 1995, when the development of inflation,

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<sup>25</sup> Today's Governing Council was then called the Governing Board. There was no Executive Board before 1999. The governor was a member of the Governing Board, but not the chairman.

<sup>26</sup> See Lindenius (1992). The Bank of England received an inflation target in October 1992.

<sup>27</sup> The Riksbank started to name its reports Inflation Reports in March 1996, when the reports were also changed from staff reports to reports signed by the governor. The Inflation Reports received inspiration from Bank of England who started to publish Inflation Reports in February 1993. This development of the reports was suggested by Lars Svensson in his comments on a speech from governor Bäckström to the Swedish Economics Association (Bäckström, 1995). The publications of Inflation Reports were however not always synchronized with the Riksbank's policy decisions on interest rates.

<sup>28</sup> Estimates of inflation expectations from the term structure of interest rates, based on a method suggested by Dahlquist and Svensson (1996), were presented in the inflation report from March 1994. New survey data on price and wage expectations collected by Statistics Sweden on behalf of the Riksbank were presented in the Inflation Report from October 1994.

<sup>29</sup> The Riksbank explicitly raised this issue in the Inflation Report from March 1996.

the exchange rate and government finances appeared to threaten the achievement of the inflation target and raised risk premia on financial markets. After the extreme peak of 500 per cent in September, 1992, the policy rate had been rapidly lowered to 11 per cent by the end of that year and to 7.75 per cent by the end of 1993. It was raised from 6.92 per cent to 8.91 per cent between August 1994 and December 1995, but then lowered again from January 1996 and was down to 3.40 per cent by end-1998.<sup>30</sup>

The review of the Riksbank Act that was presented in February 1993 did not lead to new legislation since no broad political agreement on an explicit and formal price stability mandate and increased independence for the Riksbank had been achieved yet. A new operational framework for monetary policy implementation was however introduced in June 1994 (in the form of an interest rate corridor, see Sellin, 2018). It entitled the Governor to decide the level of the policy rate (on repurchase agreements) within a given corridor, under guide-lines cleared with the Governing Council. During 1995 and 1996 the interval was changed ten times, but changes in the policy rate much more often and usually in smaller steps.

Inflation decreased during **1995 – 1998** and even became negative towards the end of 1998. A large part of the deviation of the CPI from the target was due to changes in indirect taxes and subsidies, and to the fact that lower interest rates implied lower interest costs on mortgage loans, a key component in the CPI. The Riksbank therefore also emphasized the development of a measure of underlying inflation that excluded these temporary factors. But the Riksbank's forecasts of underlying inflation for 1998 also overestimated the inflationary pressure. The Riksbank partly attributed this to lower global price pressure due to the Asian crisis during 1997, but also to lower wages in Sweden than expected. During 1998 the crisis in Russia and the collapse of the hedge fund Long-term Capital Management created further uncertainty on global financial markets, and this led the Riksbank to make additional cuts in the in the interest rate during the fall of 1998.

In the inflation report from September 1997, the Riksbank expressed an explicit rule for monetary policy:<sup>31</sup>

“The principles underlying monetary policy deliberations can be formulated as a simple rule of thumb: if the inflation forecast, starting from an unchanged instrumental rate, is in line with the target at an appropriate horizon, then the monetary stance is well balanced. If, instead, the forecast is above (below) the inflation target, then the monetary stance is too expansionary (tight) and the repo rate should be raised (lowered) either immediately or in the near future. In that this rule of thumb refers to an inflation forecast predicated on an unchanged instrumental rate, it is natural that the Riksbank adopts this assumption for its forecast.”

It is noteworthy that the rule only mentions inflation – and in particular the forecast for inflation – as guiding monetary policy decisions. No weight is placed on stabilizing the real economy. The Riksbank during this period can therefore be characterized as a strict inflation targeting central bank, as we discuss further below.

Given the importance of inflation forecasts for monetary policy, approximate inflation forecasts were published in the Inflation Reports from 1996, and GDP forecasts from 1997. A path for inflation, with an uncertainty band, was presented in December 1997.

Inflation expectations gradually converged to the target 1993 – 1998, see Figure 10. Towards the end of 1998, the rule-based inflation targeting regime can be said to have been firmly established and the full employment regime (with more discretionary policy) clearly abandoned. It is worth noting that

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<sup>30</sup> The unusual levels of the policy rate noted under 1994 and 1995 appear to be related to the fact that the Riksbank also made repurchase agreements at a variable rate for some time, where the banks bid on both volume and the interest rate, and the equilibrium rate thus depended on the bids. Further, but smaller, changes to the operational framework were made by the new Executive Board in 1999 and 2000. See Sellin (2018).

<sup>31</sup> The rule was inspired by ideas expressed by Lars Svensson in a Riksbank Working Paper from 1997, later published by Svensson (1999).

inflation thereafter remained low for more than two decades, even lower than the target on average. Unemployment became persistently higher after the crisis in the early 1990s, around 7 per cent on average, and has become a structural problem in Sweden.<sup>32</sup>

The macroeconomic development in Sweden from 1999 and until the first signs of the GFC began to show, was characterized by the global “great moderation”. The inflation targeting framework for monetary policy was refined, with better theoretical foundations, more support from quantitative analyses, and with ambitions to continuously increase the degree of transparency.<sup>33</sup> The improvements in the methods for both analyses and communication were considered important to maintain the legitimacy and credibility of monetary policy. But the favourable macroeconomic development in Sweden during this time was also due to global developments and other domestic reforms.

### 2.3.2 Other structural changes

As we have seen, economic policy underwent a gradual and broad regime shift in Sweden during the 1990s. The impetus for this was the imbalances in several areas that had been building up during the previous decades. Inflation had been high and GDP growth low, both historically and in an international perspective. In particular, the banking and currency crisis and the increases in government debt and unemployment enforced the arguments that long-run structural reforms were urgent. The regime shift in monetary policy, from a fixed exchange rate target to an inflation target in January 1993, was certainly an important part of the policy change. But the improvements of the Swedish economy in the following decade were also due to many other changes. Here we list some of the most important.<sup>34</sup>

EU membership. Sweden submitted an application for EU membership in July 1991. After negotiations with the EU and a Swedish referendum in 1994, Sweden became a member in 1995. In October 1995 the government appointed a committee to review the arguments for and against joining a euro area. The recommendations from the review – Calmfors et al. (1997) – were that Sweden was not ready to join from the start in 1999, but should have the ambition to join at a later stage. However, in a referendum in September 2003, a majority (56 per cent) voted against replacing the krona with the euro.

Fiscal policy. Swedish public debt was on an unsustainable path and peaked at 81 per cent of GDP in 1995. Several changes to the conduct of fiscal policy were made both before and after that, in order to lower both taxes and expenditure. Total government expenditure amounted to 70 per cent of GDP in 1993 and the government budget deficit to 14 per cent. Fiscal policy was neither stimulatory nor sustainable. Changes were also needed in order to satisfy the convergence criteria in the Maastricht Treaty from February 1992. In addition to many discretionary policy changes intended to have immediate effects, several changes of the rules for fiscal policy were made. The fiscal policy framework has since then been based on the following principles (Government Offices of Sweden, 2018):

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<sup>32</sup> Lars Ljungqvist and Thomas Sargent have made important contributions to the understanding of the persistence of unemployment in Europe and have also analysed the Swedish problem. Their first report was published by SNS in 1995, but more recent contributions are Ljungqvist and Sargent (1998, 2008, 2010). In addition to the hysteresis mechanisms stressed by Ljungqvist and Sargent, an important factor behind structural unemployment in Sweden is unsuccessful integration of immigrants (see e.g. Olli Segendorf and Theobald, 2019).

<sup>33</sup> See Apel and Vredin (2007). A new governor (Urban Bäckström) was in place from January 1994, and two new deputy governors (Stefan Ingves and Lars Heikensten) were appointed in March, 1994 and September, 1995, respectively. A re-organisation of the Riksbank was made in 1995. A research department was started in 1997. External scientific advisors had been appointed in 1990 (Lars Svensson) and 1993 (Peter Englund, Torsten Persson, Staffan Viotti and Anthony Santomero). Heikensten replaced Bäckström as governor in 2002, and Ingves replaced Heikensten in 2006. See Barvell et al. (2019) for information about the Riksbank’s organization and management throughout history.

<sup>34</sup> The deregulations of financial markets were obviously a very important structural change, but occurred mainly during the 1980s and are discussed in 2.2. See also Englund (2009, 2015) and Jonung and Stymne (1997).

- A stringent central government budget process. After some years of reviews and discussions, it was first implemented in the fall of 1996 for the budget for 1997.
- A target for government debt. It was first expressed in a government proposal in November 1994.
- A surplus target for government net financial savings. A surplus target of 2 per cent of GDP was expressed in April 1997.
- An expenditure ceiling from 1997, for central government expenditure (excluding interest on the central government debt) and expenditure in the old age pension system.
- A local government balanced budget requirement. A legal restriction from 2000.

Pension reform. The parliament formed a group in December 1991 to discuss possible solutions to the challenges identified in a review of the pension system. The combination of a relatively generous pension system and an unfavourable demographic development was considered unsustainable. A new pension system was negotiated during the 1990s and implemented from 1999. The public national pensions consist of a partially-funded income pension (based on life time income), a fully funded premium pension (with individual accounts) and guaranteed pension for low-income people (see Barr, 2013). The system contains a ceiling for the public pension and automatic mechanisms for indexation, adjustments to changes in life expectancy and the macroeconomic development, etcetera, that promote sustainability. But discretionary changes have also been made (e.g., of eligibility age). In addition to the public pension system, employers and unions have made agreements on occupational pensions. They are particularly important for those with incomes above the ceiling in the public pension system (see Nilsson et al., 2014).

Labour market agreements. Despite high unemployment after the banking and currency crisis, wages in Sweden continued to increase at rates inconsistent with the inflation target and labour market conflicts were common. The Riksbank repeatedly expressed concerns about the level of wage increases in the Inflation Reports and the bank suspected that matching on the labour market had become worse. An upward shift in “NAIRU” and an outward shift of the Beveridge curve were noted in the Inflation Reports in June 1996 and March 1997, respectively. In September 1997 the Riksbank argued that cyclical unemployment accounted for only 2 out of 8 percentage points.<sup>35</sup> The need to reform wage formation was recognized also by employers, union leaders and the government. In March 1997 employers and unions in manufacturing reached a new agreement, “Industriavtalet”, which became a turning point. The need to take international competitiveness into account was emphasized. Since then, the wage agreements in the manufacturing industry in practice have been used as benchmarks for the wage agreements also in other sectors.<sup>36</sup>

Central bank independence. The review of the Riksbank Act, initiated by the government in October 1990 and resulting in a report published in February 1993, did not lead to any immediate changes of the Act. But a higher degree of independence for the Riksbank was needed, both to support credibility for the inflation target, and to satisfy the Maastricht criteria (the EU Treaty). A price stability target and a higher degree of independence were among the 113 proposals suggested by a crisis commission appointed by the government in December 1992.<sup>37</sup> In October 1995, the Riksbank’s Governing Council made a proposal to the parliament that the Act should be changed in line with the earlier review.<sup>38</sup> The EMU review (Calmfors, et al., 1997) also argued that a reform that increased the Riksbank’s independence was necessary to create credibility for the inflation target if Sweden would not join the euro area. The parliament appointed a working group which delivered a proposal for changes of the Riksbank Act and new legislation was implemented from January 1999. The most important changes were that price stability became an explicit objective for the Riksbank, and that the degree of independence was enhanced. The Riksbank should henceforth be headed by an

<sup>35</sup> The method used to reach this estimate, an unobserved components model, was presented by Apel and Jansson (1999).

<sup>36</sup> For an analysis of the links between Swedish wages in different sectors and wages in the euro area, see Westermark (2019b).

<sup>37</sup> The commission delivered its report in March 1993. See Lindbeck et al. (1994) for an English version.

<sup>38</sup> This had also been suggested by Lars Svensson in his comments on Bäckström (1995).

Executive Board appointed by the Governing Council, and the latter should thus not make decisions on monetary policy any longer.

### 2.3.3 Flexible inflation targeting

In the early years of inflation targeting, communication from the Riksbank and other inflation targeting central banks was dominated by a message of “strict inflation targeting” as indicated by the simple rule mentioned above. Focus was on establishing credibility for the inflation target, and virtually no emphasis was given to the stabilization of the real economy. Although this could be justified given the bad experiences from active stabilization policy during the 1970s and 1980s, and by the need to establish credibility for the new inflation target, such a strict interpretation of inflation targeting could hardly be justified on economic grounds. For instance, in his analysis of the arguments for a conservative central banker, Rogoff (1985) emphasized the trade-off between inflation and real stability when the economy is hit by negative supply shocks. The strategy was also criticized by, among others, Fischer (1996). Indirectly, however, the Riksbank took the development of the real economy into account by emphasizing that truly transitory disturbances to inflation need not necessarily be counteracted by monetary policy. Various measures of underlying inflation were therefore used to identify persistent components of inflation. But eventually, and when credibility for the inflation target had been established, the Riksbank decided to clarify that the development of the real economy was also taken into account (Heikensten, 1999), i.e., that the inflation target had an element of flexibility.<sup>39</sup> The original formulation of the inflation target included a tolerance interval, but the relevance of the interval has been unclear. The clarification of the strategy implied that real stability became a more explicit objective.

After two further cuts of the interest rate in the beginning of **1999**, in response to the global effects from the crises in Asia and Russia, the Riksbank started to raise the interest rate again in November 1999, from 2.90 per cent, to 4.25 in July 2001. Inflation increased rapidly during **2001** and early **2002** and became higher than expected and higher than the target. The interpretation was that this was primarily due to unfavourable supply shocks (e.g., to food prices), with temporary effects on inflation. But GDP growth was also high during 1999 and 2000, and capacity utilization may have been underestimated. During this period, the Riksbank made efforts to explain how its actions could be interpreted in terms of a systematic rule. This analysis and communication was facilitated by the publication, in the June 2000 inflation report, of forecasts of inflation and GDP from December 1992 and onwards.<sup>40</sup>

The Riksbank however also emphasized that no simple rule can provide a complete description of optimal policy under all circumstances. During 2001 this became evident when the Riksbank decided to intervene in the foreign exchange market to support a weak krona (see Heikensten and Borg, 2001) and when the Riksbank and several other central banks lowered their policy rates after the terrorist attack in New York and Washington DC on 11 September.

During **2002** and **2003** inflation developed largely, on average, as expected and in line with the inflation target, although there was a sharp and temporary increase in energy prices in early 2003.<sup>41</sup>

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<sup>39</sup> The article by Heikensten (1999) also corresponded to a formal decision taken by the Riksbank’s new Executive Board on February 4, 1999. The Executive Board took office in January as a result of the new Riksbank Act. Heikensten and Vredin (1998, 2002), Apel et al. (1999) and Apel and Vredin (2007) describe how the Riksbank’s thinking and communication evolved. The analytical foundations can be found in e.g. Rogoff (1985) and Svensson (1997, 1998). The interaction between academic research and monetary policy during the formation of inflation targeting is described by Apel et al. (2008).

<sup>40</sup> See Jansson and Vredin (2003) and Berg et al. (2004). Comparisons of the Riksbank’s decisions with different policy rules, and comparisons of forecasts from different institutions, were in particular presented in “material for assessing monetary policy”. This material was submitted yearly to the parliament after the new Riksbank Act had come into effect. From 2000 the material was included as special boxes in the Inflation Reports, and from 2008 extended assessments were delivered in separate reports, “Material for assessing monetary policy”. From 2012 the name of the report has been “Account of Monetary Policy”. *The descriptions of monetary policy in Sweden from 1997 and onwards in this paper are largely based on these yearly assessments from the Riksbank.*

<sup>41</sup> In the “Material for assessing monetary policy 2001 – 2003” (Inflation Report, March 2004), the Riksbank used five different measures of underlying inflation to illustrate the more persistent movements in inflation 1995 – 2003.

The krona strengthened in effective terms (less against the euro) during 2002 and 2003, which contributed to low imported inflation and an overestimation of imported inflation that counteracted an underestimation of domestic inflation.

Both domestic and imported inflation fell sharply during **2004**. In the forecasts made in 2003 low inflation in 2004 had been anticipated. Energy prices were expected to fall, the global and domestic economic outlook had deteriorated, and uncertainty was large due to geopolitical uncertainty (war in Iraq). The interest rate was gradually lowered from 3.75 per cent in January 2003 to 2.0 per cent in March 2004. Still, the decline in inflation during 2004 was larger than expected. The Riksbank attributed this to positive developments on the supply side rather than to weak demand. GDP increased more than expected, productivity increased fast, perhaps partly driven by IT investments, and competition had increased both globally and domestically. In its assessments to the parliament in the beginning of each year 2005 - 2007, the Riksbank also emphasized that an even more expansionary monetary policy during 2002 – 2005 would not have been appropriate, since this would have raised household debt and property prices even more (and demand was strong). This was thus a relatively early discussion of possible trade-offs between price stability and financial stability and of preferences for leaning against the wind. The links between financial imbalances and monetary policy were also discussed internationally at the time, see e.g. Borio and Lowe (2002), Rajan (2005) and Rudebusch (2005).<sup>42</sup>

During **2005** inflation continued to be lower than the Riksbank's forecasts despite good economic growth. The bank continued to interpret this as reflecting structural changes and positive supply shocks (e.g., to productivity), both domestically and internationally, in addition to a change in the methodology for computing the CPI. The Riksbank also started to use a new general equilibrium model, see Adolfson et al. (2007, 2008), that supported this interpretation. Jansson and Vredin (2004) had argued for a larger role for formal models in the Riksbank's forecasting and decision-making process. They also pointed to problems with the assumption of a constant interest rate used both in the Riksbank's forecasts and the simple policy rule (in line with several other central banks at the time).<sup>43</sup> Beginning with the Inflation Report in October 2005 the Riksbank instead based its forecasts on the assumption that the policy rate would follow market expectations. The policy rate was lowered to 1.50 per cent in June 2005 when new data suggested that economic growth was slower than expected, although the development of house prices and households' borrowing led to some concern that monetary policy was too expansionary. In December 2005, some Board members even argued that the interest rate should be raised again, to reduce the risk of a further weakening of the krona and to counteract an unsustainable development of house prices.

Inflation increased during **2006**, as had been expected in 2005. But inflation remained below the target, and the composition was different than expected. Energy prices increased faster than in the Riksbank's forecasts, while other prices increased less than expected, despite strong economic growth, in Sweden and globally, 2004 - 2006. The Riksbank continued to interpret the low inflation as caused by structural changes, including a growing share of imports from low-cost countries such as China. The Riksbank's macro model interpreted the low inflation as primarily reflecting positive technology shocks.

From January 2006 and until October **2007** the policy rate was raised from 1.5 per cent to 4.0 per cent. A continuing economic upturn, in Sweden and globally, was expected to raise inflation towards the target. The development of inflation and economic activity largely were in line with the Riksbank's forecasts. Interest rates were raised also in, e.g., the US, the euro area and the UK. The economic upturn however slowed somewhat during 2007. A drop in house prices in the US (by

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<sup>42</sup> It should be noted that 2005 was not the first time financial stability risks were considered in the Riksbank's monetary policy decisions during the inflation targeting regime. Berg et al. (2004, p. 20) present an example from 1994. Deputy governor Lars Nyberg said the following in a speech 1999: "If the asset markets are exposed to strong shocks in the form of large, sudden price falls and this threatens the financial stability, the Riksbank's monetary policy could be adjusted to try to restore stability" (Nyberg, 1999).

<sup>43</sup> The suggestions from Jansson and Vredin (2004) were inspired by the monetary policy process at the Reserve Bank of New Zealand (see, e.g., Archer, 2004), but also from arguments presented by Sims (2002), Leeper (2003) and Faust and Henderson (2004).

around 9 per cent) and emerging problems with securitised loans had given rise to turmoil in financial markets causing a sharp fall in housing investments in the US. Spreads between interbank and government bond rates increased rapidly in August 2007, especially in the US, but to a smaller degree and somewhat slower also in other countries, including Sweden. This did not stop the Riksbank from raising the interest rate in September and October. Uncertainty about international developments was an argument for leaving the interest rate unchanged in December. Interestingly, the development of house prices and household borrowing in Sweden was mentioned as an argument by the Riksbank's Executive Board when the policy rate was increased in January and February 2006. As noted above, a preference for such leaning against the wind had been presented by some Board members also in December 2005.

The Riksbank's methods for monetary policy analysis and communication changed in several respects during 2006 – 2007, i.e., during the years immediately before the GFC. In a new report on "Monetary Policy in Sweden" in May 2006, the Riksbank further clarified that a "well-balanced monetary policy" does not imply strict inflation targeting but also an objective to stabilize real economic activity.<sup>44</sup> Interestingly, the Riksbank then also felt the need to express that also "changes in asset prices and other financial variables" are routinely taken into account.<sup>45</sup>

A milestone in the Riksbank's development of its flexible inflation targeting strategy was when the Inflation Report was changed to a Monetary Policy Report in February 2007.<sup>46</sup> Beginning with this report, the main forecast scenario was conditioned on an endogenous interest rate forecast detailing the Executive Board's own view of the interest rate up to three years ahead. The report from now on thus included more information about the Board's policy assessments.<sup>47</sup> The changes were made for several reasons (see Rosenberg, 2007, and Apel and Vredin, 2007). First and foremost, an interest rate forecast promoted consistency in the staff's work with macroeconomic forecasts more generally. The earlier approaches of conditioning the forecasts on a constant interest rate or on market expectations were difficult to implement and support using best-practice forecasting methods. But the presentation of a forecast of the interest rate path was also intended to be a further step towards increased transparency and credibility in monetary policy. It would lower the need for the usual central bank practice of sending vague "signals" about policy intentions.<sup>48</sup> More transparency would also promote accountability since it would facilitate evaluations of the Riksbank's forecasts and policy decisions. And better evaluations would in turn lead to higher internal efficiency and better methods for analyses and decisions.

Further changes to the Riksbank's communication strategy were implemented during 2007. The Executive Board agreed to minimize signalling between monetary policy meetings. Externally communicated assessments of future interest rate developments should normally only be made in connection with the monetary policy meetings. In between the meetings there would not normally be any new assessments of the monetary policy intentions. The Executive Board also decided to publish attributed minutes from the monetary policy meetings. Previously (from 1999) individual views had only been published in the minutes if someone had entered a reservation against the

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<sup>44</sup> The latest major revision of this document was made in 2010, see [monetary\\_policy\\_2010\\_addendum\\_sept\\_2017.pdf \(riksbank.se\)](#).

<sup>45</sup> Bank of England started to publish Financial Stability Reviews in October 1996. The Riksbank started to publish Financial Stability Reports in 1997, but the work with the reports on monetary policy and financial stability have never been integrated. In January 2001 the Riksbank organized a conference, see Jacobson et al. (2001), where Lowe (2001) argued for a flexible approach to inflation targeting which would allow the central bank to use its monetary policy instruments to promote financial stability. Borio and Lowe (2002) developed this idea further. But this issue has remained contentious and the Riksbank has not (except, possibly, during 2013) explicitly said that financial stability is one of the objectives for monetary policy, although a reading of Inflation Reports, Monetary Policy Reports and other material does suggest that the Executive Board has been leaning against the wind now and then.

<sup>46</sup> Bank of England renamed its Inflation Report to Monetary Policy Report in November 2019.

<sup>47</sup> The Reserve Bank of New Zealand started to present its own interest rate forecast in 1997 and Norges Bank in 2005.

<sup>48</sup> In the Inflation Report from December 9, 1997, the Riksbank argued that "there is good reason this winter to alter the monetary stance in a less expansionary direction". Two days later the Riksbank raised the interest rate. On December 2, 2005, the Riksbank left the interest rate unchanged, but declared that "one cannot rule out the possibility that the repo rate will need to be raised more during the winter and spring than market rates imply". The interest rate was then raised in January and February. This type of signals led to discussions both inside and outside the Riksbank about the proper definition of the state of "winter".



majority's decision.<sup>49</sup> Both changes were intended to increase transparency. Signalling between policy meetings was thus considered to be unnecessary – at least in tranquil times – and possibly confusing, given that explicit interest rate forecasts were now published. In addition, more information about the different views within the Board could promote better understanding of the Board's forecasts and reaction function(s).

The simple rule with a two-year horizon and an inflation forecast based on a constant interest rate had thus been replaced by a more sophisticated targeting rule, in line with the theoretical literature on flexible inflation targeting (e.g. Svensson, 1998). Even if this was a logical step towards a more systematic and transparent monetary policy, it also required new forms of communication. In September 2007 it was decided that the Riksbank would publish forecasts for the future repo rate path (and other important variables) in connection with each monetary policy meeting (i.e., not only in connection with the Monetary Policy Reports) and that there normally would be only six ordinary monetary policy meetings per year.

## 2.4 Phase IV, 2008 – 2022: Handling unusual circumstances

As described above, monetary policy during the years 1993 – 1998 was focused on establishing credibility for the inflation target and on a relatively “strict” interpretation of the inflation targeting regime. This was followed by a period, 1999 – 2007, when the “flexible” inflation targeting strategy was refined, culminating in the publication of interest rate forecasts and a Monetary Policy Report (rather than an Inflation Report). From 2008 the Riksbank has dealt with challenges and instruments not originally considered within the inflation targeting framework, in particular shocks to the financial system.

### 2.4.1 The global financial crisis, 2008 – 2009

**2008** was a dramatic year. During the first half of the year, the Riksbank had to assess the relative strengths of different forces, pushing inflation in different directions. On the one hand, economic activity had been growing fast both globally and in Sweden 2004 – 2007. Inflation in Sweden was on the rise since 2003 and became higher than the target by the end of 2007. Inflation continued to increase during most of 2008, in particular prices of energy, food and commodities on international markets. But low growth in domestic productivity also contributed to increasing costs. On the other hand, the turbulence on financial markets, in particular in the US, continued and escalated. Risk premia had increased significantly during the second half of 2007, and the Fed cut its policy rate from 5.25 per cent to 4.75 per cent in September 2007.<sup>50</sup> Bank of England lowered its policy rate from 5.75 per cent to 5.5 per cent in December 2007, after three previous increases in January, May and July. Global growth slowed down in 2008 and the Fed and the BoE continued to lower their policy rates. The ECB kept its policy rate unchanged during the first half of the year, but raised it to 3.25 per cent in July 2008.

The Riksbank raised the policy rate by 25 basis points in the monetary policy meetings in February, July and September 2008, to reach the level of 4.75 per cent. The international turbulence and weaker economic activity were noted, but Swedish inflation had reached the highest level since 1993 and a more contractionary monetary policy was viewed as necessary to stop the sharp increases in food and energy prices from spreading to other prices. Interestingly, at the meeting on 3 September the policy rate was raised at the same time as the forecast of the future rate was lowered – because

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<sup>49</sup> Since April 2009 the Riksbank also publishes reservations immediately in the press releases after each monetary policy decision. According to Dincer and Eichengreen (2014), the Riksbank was the most transparent central bank in the world by 2010.

<sup>50</sup> Spreads between interbank rates and government bond rates increased from almost zero to 100 – 200 basis points in the US, and 50 – 100 basis points in the euro area, the UK and Sweden.

economic growth had slowed down more than expected, and oil and commodity prices had started to fall.

Risk premiums had increased from the beginning of 2007. Finally, international financial markets completely crashed when Lehman Brothers filed for bankruptcy on 15 September 2008. On 8 October the Riksbank lowered its policy rate by 0.5 percentage points in an extra monetary policy meeting, in a coordinated action with the Federal Reserve, Bank of England, ECB, Bank of Canada, and the Swiss National Bank (also supported by the Bank of Japan). The policy rate was then cut by another 0.5 percentage points at the scheduled policy meeting on 22 October. In December, the policy meeting was even brought forward by two weeks, and the policy rate was cut by 1.75 percentage points, i.e., to 2 per cent. GDP had fallen during the second and third quarter, borrowing costs for households and firms had increased because of increased risk premiums, and inflation had come down as energy and commodity prices had now started to fall.

Increased risk premiums and general financial turbulence meant that the normal transmission mechanisms for monetary policy were severely disturbed, and there were high risks of further financial instability. Swedish banks were hit by the funding problems in international markets, some of them partly because of heavy exposures to mortgage loans in the Baltic countries, who were subject to a debt and currency crisis (see Johansson et al., 2018). The Riksbank continued to lower the policy rate during 2009, but also implemented several other measures during 2008 and 2009 to promote financial stability and the supply of liquidity and credit:<sup>51</sup>

- changes to collateral requirements were made on several occasions
- loans with a longer term than the overnight loans in the normal standing facilities were offered, starting with three months (later complemented with six month loans), first at a flexible interest rate and later at a fixed rate
- one-week certificates of deposits (so called Riksbank certificates) were issued
- loans with commercial paper as collateral were offered, with the intention to assist corporate funding
- the set of eligible counter-parties was expanded
- loans in US dollars were offered
- swap agreements with the Federal Reserve and the ECB were made to get more access to foreign currency
- acted as a lender of last resort to two individual banks
- supported the central banks in Iceland, Latvia and Estonia through swap agreements
- increased the Riksbank's own foreign exchange reserve

Most of these decisions were not taken at pre-scheduled monetary policy meetings, but as separate decisions in between the meetings. The decisions were motivated by concerns both for the stability of the financial system and general macroeconomic stability. For example, the decision to provide longer-term loans in Swedish krona, taken on 5 October 2008, was based on the following considerations: "The difficulties for the banks to obtain financing now risk having negative consequences for the credit supply to companies and households. This entails risks for macroeconomic stability in general. ... The interest rate on these loans should be in harmony with current monetary policy. ... It is therefore suggested that the Head of the Monetary Policy Department adjusts the scope of the auctions according to the prevailing market conditions and the bids received."<sup>52</sup> The changes in the loan facilities (including US dollars) and collateral requirements made in September and October 2008 were only briefly mentioned in the "Material for assessing monetary policy 2006 – 2008" delivered to the parliament in February 2009 (p. 42): "In a short period of time the central banks in several countries, including the Riksbank, were forced to take measures to support individual banks and to improve the functioning of the financial markets". The

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<sup>51</sup> Measures were also taken by the National Debt Office, who issued treasury bills and lent the funds to banks against collateral in mortgage securities. The Government also issued guarantees. For more detailed descriptions of the Riksbank's measures, see e.g. Elmér et al. (2012) and Berg et al. (2018).

<sup>52</sup> See [Krediter med längre löptider i svenska kronor \(riksbank.se\)](https://www.riksbank.se/meddelanden/krediter-med-langre-loptider-i-svenska-kronor).

corresponding report delivered a year later, in contrast, contained a new table with a selection of the “complementary measures” undertaken 2008 and 2009. The total lending to Swedish banks during the first year of the financial crisis amounted to around 400 billion, corresponding to around 12 per cent of GDP. Although the Riksbank, in contrast to e.g. the Fed, did not make any asset purchases, the increase in the Riksbank’s balance sheet, in relation to GDP and primarily through loans to the Swedish banks, was larger than in the US, the Euro area or the UK.<sup>53</sup>

In December 2008, world trade had fallen by around 10 per cent compared with the same month one year earlier and Swedish exports fell to the same extent. In the first monetary policy report in **2009**, in February, the Riksbank’s main scenario was that GDP would fall by 1.4 per cent, although a scenario with a larger fall, -2.4 per cent, was also considered. By the end of the year, the Riksbank’s assessment was that GDP had fallen by 4.3 per cent during the year, the largest fall since the crisis in the 1930s. Inflation, however, developed almost as expected. The outcome for CPI inflation was -0.3 per cent, but this was largely a result of the direct effects on mortgage costs from lower interest rates. Inflation excluding such effects, CPIX, was 1.9 per cent during 2009. As the effects of the financial crisis on the real economy became larger than expected during the year, the Riksbank lowered the policy rate from 2 per cent to 0.25 in three steps, in February, April and July. This was then considered, at least by a majority of the Board, to be the effective lower bound, and the interest rate was kept unchanged during the rest of the year. The Riksbank continued with its “complementary” measures, and also emphasized in its forecasts that no policy rate increase was expected until the end of 2010. Since the Riksbank had published interest rate forecasts since 2007, it was natural to use such “forward guidance” as an additional tool, although this specific term started to be used (by some other central banks) only later.<sup>54</sup>

Turbulence in financial markets subsided and risk premiums decreased gradually during 2009. Economic activity started to recover, both in Sweden and abroad, during the second half of 2009. But a new crisis emerged during 2010, the European debt crisis.

#### 2.4.2 The rise and fall of leaning against the wind, 2010 – 2014

The Riksbank decided at the monetary policy meeting on 30 June, **2010**, to raise the interest rate from 0.25 per cent to 0.5 per cent, i.e., somewhat earlier than in the forecasts made in the Monetary Policy Report in the end of 2009.

The development during 2010 was a mirror-image of 2009: During 2010 the world economy grew faster than expected, this spilled over to a more rapid recovery of Swedish exports and GDP than expected. The forecasts of domestic inflation were not changed much during of 2010, but in order to keep inflation close to target the normalisation of monetary policy was brought forward in time. The policy rate was raised in September, October and December to reach 1.25 per cent by the end of the year. The extra-ordinary lending from the Riksbank was gradually phased-out as the loans expired, and by the end of the year the primary reason for the higher level of the Riksbank’s balance sheet was the increase in foreign exchange reserve decided by the Board in May 2009. The fact that the growth of the Riksbank’s balance sheet during the crisis was due to time-limited lending and not asset purchases contributed to the sharper decline of the balance sheet compared with other central banks.

In addition to the development of inflation and capacity utilization in Sweden, two other factors were very important for the Board’s monetary policy decisions during 2010. First, risks linked to the high and increasing level of household indebtedness were considered in the Board’s discussions and

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<sup>53</sup>The Riksbank’s balance sheet became about as large, in relation to GDP, as the ECB’s, since the ECB had a larger balance sheet before the financial crisis, see Figure 11. The Riksbank’s balance sheet decreased as the loans expired during 2010, unlike the cases of the Fed, the ECB or the Bank of England where the balance sheets had also been increased through asset purchases.

<sup>54</sup>Fed has described that it has used forward guidance from 2004, and the ECB and the Bank of England has communicated that they started in 2013.

decisions on monetary policy. The quantitative importance for policy rate setting of “leaning against the wind” is unclear, but in June 2010 the Riksbank published an updated version of its document on the inflation targeting strategy, “Monetary Policy in Sweden”, which included “some additions as a result of experiences and impressions from the financial crisis” (quotation from press release, 3 June, 2010). In the descriptions of the strategy, it was explicitly stated that “risks linked to developments in the financial markets are taken into account in the repo rate decisions”.<sup>55</sup> As noted above, some preferences for “leaning against the wind” had already been expressed in 2005 – 2006, but it became more explicit and systematic during 2010 - 2013.<sup>56</sup>

Second, although global growth recovered faster than expected, growth in the euro area did not pick up as fast as in the rest of the world, and increasing government debt in some euro area countries became a source of concern. Risk premiums started to increase again in the euro area, spilling over into Sweden, but not in the US. In May 2010, the government of Greece needed assistance from the EU and the IMF. The situation in the euro area created more pessimism about the recovery in the longer run. This resulted in an unusual combination of Riksbank monetary policy moves during the year: while the policy rate was gradually adjusted upwards, the forecasts for the policy rate during the coming years were gradually adjusted downwards. For instance, in the beginning of 2010 the expected policy rate in early 2012 was almost 3 per cent, but by the end of the year this forecast was around 2 per cent. During 2010 the Riksbank also put extra focus on the difficulties of defining measures of the degree of capacity utilization that should be taken into account in monetary policy.<sup>57</sup>

The macroeconomic development during **2011** followed similar tendencies as in 2010. The Riksbank had to assess the implications of two counter-acting forces: GDP growth in Sweden was stronger than expected, but problems with high public debt (not only in the euro area, but also the US) dampened the growth in Sweden’s trading partners’ economies and there were risks for negative spill-overs.<sup>58</sup> Sweden’s public finances were in much better shape than the public finances in many other countries and did not give reasons to fiscal tightening. Public debt has been low and stable since 2010 – see Figure 6.

Inflation in Sweden developed largely as expected. “Underlying” inflation was low, among other things due to low wage increases and an appreciation of the krona. Inflation in terms of CPIF was 1.4 per cent, but the Riksbank’s increases in the policy rate led to higher mortgage costs and the increase in CPI was 3.0 per cent. The Riksbank raised the interest rate with 0.25 points at each of the policy meetings during the first half of the year, from 1.25 per cent to 2 per cent, based on the expectation that increased capacity utilization would lead to higher inflation in wages, other costs and prices. The high and increasing level of household indebtedness also influenced the decisions. There was disagreement in the Board about the level of capacity utilization, the risks for higher inflation, the problem with household indebtedness and the risk of weakening developments abroad – and consequently about how fast the interest rate should be raised. The Riksbank raised the policy rate more and faster than the ECB 2010 - 2011, while the Fed kept its policy rate constant, see Figure 9.

Between February and December of 2011, the forecast for GDP growth in Sweden 2012 was lowered from 2.8 per cent to 1.7 per cent. This was strongly related to a more pessimistic view of the development in the euro area, for which the corresponding forecast revision was from 1.7 per cent to 0.2 per cent. A more negative view on the development abroad was, in turn, largely related to expectations about consequences of fiscal tightening, not only in the euro area but also the US.

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<sup>55</sup> The descriptions on this point were extended in the “Material for assessing monetary policy 2010” compared to the previous year’s report, and a change was also made in the Monetary Policy Report in July 2010 compared to the previous report from February.

<sup>56</sup> In the updated description of the strategy, the Riksbank also removed the tolerance interval (of +/- 1 percentage point) that had been part of the strategy since 1993. The tolerance interval however had no ground in the formal models of inflation targeting, and had not had much practical relevance either, so the Riksbank considered it obsolete. The importance to communicate that the inflation target was indeed flexible however remained, and the Riksbank re-introduced a “variation band” in September 2017, when also the target variable was changed from CPI to CPIF.

<sup>57</sup> See Nyman (2010), and Palmqvist (2007) and Jonsson et al. (2008) for earlier contributions. The contribution of Jonsson et al. (2008) was the first report in a new form of publications from the Riksbank, Economic Commentaries.

<sup>58</sup> Interest rates on government bonds increased dramatically during 2011 in Greece, Ireland, Italy, Portugal and Spain.

There was a sharp fall in stock prices in the US, the euro area and Sweden during the summer. Lower inflation than expected in October and November, and clear indications that the negative development abroad now affected also growth and employment in Sweden, led the Board to lower the policy rate to 1.75 per cent in December. The forecast was that the interest rate would be approximately unchanged during 2012 but raised again during 2013. The Riksbank thus continued to use the interest rate path as an additional policy instrument, but the term “forward guidance” was not used.

The development during **2012** is perhaps best described as characterized by large uncertainty. Stock markets recovered during the end of 2011 and beginning of 2012, but then weakened again. The problems in the euro area first seemed to improve, but then worsened again. The ECB had started to lower its policy rate in 2011 and made a further cut in July. In July Mario Draghi gave his “whatever it takes” speech which was followed by a decrease in interest rates on government bonds in the euro area and another recovery on stock markets. GDP in Sweden increased slower than during 2011, but somewhat faster than expected after the downward revisions of the forecasts in the beginning of the year. The krona appreciated and inflation remained below the target.

In contrast to the forecast from December 2011, the policy rate was lowered at the meetings in February, September and December to reach 1 per cent by the end of year. The primary reason for the more expansionary monetary policy was the weakening economic activity (both abroad, in particular the euro area, and in Sweden) and the continued low level of “underlying” inflation.

The differences in opinion within the Board, regarding e.g. importance of high household debt and state of capacity utilization, continued. For instance, the Riksbank’s estimate was that a long run sustainable level of unemployment could be in the interval 5 – 7.5 per cent, but one member explicitly argued that the level was around 5.5 per cent. (Unemployment increased slightly during the year, and the average level was 7.7 per cent.) Matching problems in the labour market contributed to the difficulties in identifying the cyclical and structural parts of unemployment.<sup>59</sup> In 2011 the parliament’s Finance Committee had asked for more information from the Riksbank about areas that the Riksbank intended to deepen its analyses in. The Riksbank identified the functioning of the labour market and the integration of financial conditions into the forecasting and modelling work as two such areas. In “Account of monetary policy 2012” the Riksbank also highlighted the persistently low inflation after the global financial crisis and informed the parliament that an inquiry into the causes of the low inflation was underway.<sup>60</sup>

In May **2012** the Riksbank decided to purchase a small portfolio of Swedish government bonds, amounting to 10 billion SEK (around 0.3 per cent of GDP), as a step towards increased preparedness for larger asset purchases. The Riksbank’s previous holdings of Swedish government bonds was reduced from around 30 billion SEK (around 1 per cent of GDP) to zero in 2000 – 2001 when the parliament decided that the Riksbank should make extra large transfers to the government budget. The Riksbank’s decision to buy government bonds in 2012 was affected by the experiences from the financial crisis in 2008. By establishing a portfolio of securities in domestic currency, the Riksbank wanted to ensure that the required systems and human capital should be in place if it would become necessary to rapidly take extraordinary measures in the future.<sup>61</sup>

Inflation remained low during **2013**, as partly anticipated by the Riksbank. The forecast was however that inflation would increase towards the end of the year, but this did not materialize. Especially prices of services increased surprisingly slowly, but general difficulties for firms to pass on their cost increases to customers were also noted. Unit labour costs also developed slowly due to increases in productivity. GDP increased during 2013, but still at a slower rate than normal (and somewhat slower than expected), so capacity utilization remained low. Unemployment was stable around 8 per cent.

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<sup>59</sup> The monetary policy reports in July and October contained boxes on the long-run development on the labour market and its functioning.

<sup>60</sup> See Andersson et al. (2015) for a report on this subject.

<sup>61</sup> In the beginning of September 2012 the ECB decided to introduce a programme for government bond purchases, “Outright Monetary Transactions” (OMT).

The Riksbank remained concerned over household indebtedness. “Cleaning up afterwards”, the preferred strategy of many central banks for dealing with financial turbulence before the global financial crisis, did not seem as a sufficient strategy after the global financial crisis. The need to act more pro-actively was recognized. The relative importance of monetary and macro-prudential policy in promoting financial stability was however also discussed.<sup>62</sup> The Riksbank acknowledged the trade-off between limiting the risks to financial instability and reaching the inflation target at an appropriate horizon. The Riksbank was thus explicitly leaning against the wind. Despite low inflation, the policy rate was not immediately cut, although the future interest rate path was significantly lowered in April. As inflation outcomes turned out lower than expected during October and November, the Riksbank finally cut the policy rate from 1 per cent to 0.75 per cent in December and moved the time for the expected increase in the interest rate further ahead.

The monetary policy meeting on 2 July, **2014**, stands out as an especially important event in the history of the Riksbank’s inflation targeting regime. First, the Riksbank, in effect, abandoned its attempts to lean against financial imbalances. Second, Governor Ingves took a minority position and voted for an interest rate cut of 25 basis points, while a majority made the decision to cut by 50 basis points to 0.25 per cent. This is the only example during the inflation targeting regime in Sweden, so far, of a meeting where the Governor has not been part of the majority.

Capacity utilization was estimated to be slightly below normal, but stable, with an output gap of around -1 per cent, in 2013 and 2014. GDP growth was around 2 percent in 2014. But inflation had been falling steadily since 2008. In the euro area, the US and the United Kingdom, inflation first increased after the GFC, between mid-2009 and mid-2011, and then started to fall again. In Sweden, inflation fell from around 2 per cent in 2010 to around 0.5 per cent (CPIF) in 2014. Importantly, measures of inflation expectations also declined systematically. Five year inflation expectations were only slightly below 2 per cent, but two year expectations declined to around 1 per cent. The Riksbank had kept the policy rate unchanged until the end of 2013, but after further negative inflation surprises the interest rate was lowered to 0.75 per cent in December 2013 and then to 0.25 per cent and zero in July and October 2014, respectively.

The reasons for the surprisingly low inflation in 2014 were believed to be a combination of weak economic activity and lower inflation abroad, including lower energy prices, and a competitive pressure and weak demand domestically that limited firms’ possibility to raise prices. The krona had appreciated since the end of 2009, which was interpreted as one reason why inflation was lower in Sweden than in e.g. Norway. But there was also a worry that lower inflation expectations contributed to the low inflation in Sweden. Furthermore, the ECB cut its deposit rate to zero in June and signalled that it would be low for a long period to come. Against this backdrop, the Riksbank explicitly declared that although rising household indebtedness and house prices still involved risks, monetary policy now had to focus on maintaining credibility for the inflation target. The Riksbank argued that the government and other public authorities should take a larger responsibility for managing financial stability risks. The government had announced in the autumn of 2013 that the Financial Supervisory Authority (FSA, Finansinspektionen) would have the main responsibility for macro-prudential policy, and a Financial Stability Council with representatives from different authorities including the Riksbank had been formed. The Riksbank’s monetary policy considerations thus changed gradually during 2013 and 2014, towards focusing more on the deviation of inflation from target and the development of inflation expectations, and less on risks for financial stability. The Riksbank still argued for more restrictive macro-prudential rules on banks and households.

In December 2014 the Riksbank kept the policy rate unchanged at zero, but maintained the view that a more expansionary monetary policy was needed. At this stage, the Board decided to postpone the forecast of the first policy rate increase further, i.e., to use forward guidance to stimulate economic

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<sup>62</sup> For examples of the Riksbank’s efforts to study this issue, see Jonsson and Moran (2014) and Finocchiaro et al. (2016). The Riksbank’s monetary policy report from February 2014 and the “Account of monetary policy 2013” contained articles on the links between financial imbalances and monetary policy. See also the different views presented in Riksbank publications by Woodford (2012), Svensson (2012), Smets (2013), Billi and Vredin (2014) and Leeper and Nason (2015).

activity and inflation. But the Board also stressed that “The Riksbank is also preparing further measures that can be used to make monetary policy even more expansionary”.

#### 2.4.3 Quantitative easing, 2015 – 2019

The “further measures” undertaken during **2015** were – following some other central banks – to lower the interest rate to negative territory and to implement quantitative easing in the form of large scale purchases of government bonds. In February the Board decided to lower the policy rate to negative 0.10 per cent and to buy 10 billion SEK of Swedish governments bonds. By the end of the year the policy rate had been lowered to negative 0.35 per cent and the limit for the total amount of bond purchases raised to 200 billion SEK (corresponding to around 5 per cent of GDP). During 2016 the policy rate was lowered even further, to negative 0.50 per cent, and the plan for bond purchases raised to 275 billion SEK.

During 2015, GDP growth was stronger than expected, and unemployment lower, while inflation turned out to be almost as expected, but still lower than the target (around 1 percentage point in terms of CPIF). The interpretations of the low inflation thus referred to possible supply shocks, such as strong productivity growth, unusually low mark-ups and falling energy prices (the oil price fell by more than 50 per cent from the middle of 2014 to the end of 2015). The primary reason why the Board, despite high GDP growth and rising inflation, decided to make monetary policy even more expansionary during 2015 can be described in terms of a *risk management approach*. The tolerance for even lower inflation was very limited. The Board saw a risk that inflation and inflation expectations would continue to undershoot the target, especially if the krona would appreciate as a result of expansionary monetary policy in the euro area. The ECB decided in January to make bond purchases amounting to 60 billion EUR per month from March 2015 until September 2016 (corresponding to, in total, about 7 per cent of GDP). The krona strengthened by around 5 per cent versus the euro between mid-February and mid-March. Uncertainty about global growth led to lower forecasts of future inflation and was seen as an argument for a more expansionary monetary policy i.e. further asset purchases and further postponement of an increase in the policy rate.

It should be noted that the increase in the Riksbank’s balance sheet from 2015 and onwards took different forms than in 2008 – 2009. During the GFS, the transmission mechanism of monetary policy was disturbed by instability in the banking system. The Riksbank therefore changed the conditions for its lending facilities (see section 2.4.1). Also in 2015 a more expansionary monetary policy was needed, but this did not require new forms of liquidity support to the banks.

The positive macroeconomic development continued during **2016**, with increased capacity utilization, lower unemployment and somewhat higher inflation (although lower than expected). The Riksbank still continued to implement more expansionary monetary policy, for similar reasons as during 2015. There was high uncertainty about the robustness of global growth (related, among other things, to the UK’s decision to leave the EU). The increase in inflation (which now was partly driven by an increase in energy prices) was viewed as “fragile”. There was a continued risk that the krona would appreciate as a result of further expansionary monetary policy in the euro area. In two extraordinary monetary policy meetings in January, the Board decided to be prepared to instantly intervene on the foreign exchange market if necessary.<sup>63</sup> The forecast of inflation (CPIF) 2017 was revised from 2.2 per cent in December 2015 to 1.6 per cent in December 2016, despite the further measures to make monetary policy more expansionary. The gap between the Riksbank’s forecasts and others’ expectations however decreased, since the latter increased during both 2015 and 2016.

The continued expansionary monetary policy combined with the healthy development in economic activity meant that the Riksbank during 2016 had to respond to a criticism that monetary policy had

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<sup>63</sup> During 2016 the krona depreciated for other reasons and the Riksbank did not make any foreign exchange interventions. The mandate for the Governor and First Deputy Governor to make decisions on interventions was however extended a number of times and was not revoked until February 2019.

become too expansionary. The Board, among other things, replied that the low (and by then even negative) level of the policy rate largely reflected a long downward trend in the global real interest rate. Monetary policy had to focus on the risk that inflation and inflation expectations would stay too low persistently. The Riksbank recognized the financial stability risks associated with low real and nominal interest rates, but argued that other policy measures than monetary policy (macro-prudential and fiscal policy, structural changes on the housing market) were needed to handle this.<sup>64</sup> During 2016, there were larger differences in opinions within the Board about asset purchases than during 2015.<sup>65</sup> There was also an emerging discussion about the effects of the Riksbank's asset purchases on the liquidity of the market for government bonds.

In January 2016, an external review to the parliament's Finance Committee, Goodfriend and King (2016), recommended that certain aspects of the inflation targeting framework should be reconsidered. For instance, Goodfriend and King suggested that the definition of the inflation target should be defined in terms of CPIF rather than CPI, and that the experiences of publishing interest rate forecasts should be evaluated.<sup>66</sup> As noted above, the question about the appropriate definition of the inflation target, and the relevance of various measures of "underlying" or "core" inflation has been discussed ever since the inflation target was declared in 1993.<sup>67</sup> The recommendation from Goodfriend and King differed from the conclusion in the previous evaluation by Goodhart and Rochet (2011), who argued that the target should be formulated in terms of CPI.

In **2017**, inflation was back to target (and somewhat higher than expected in 2016). Several mechanisms contributed to higher inflation: increased capacity utilization both in Sweden and abroad, lagged effects from a weaker krona in 2016, higher energy prices, low productivity growth and higher inflation expectations. Only minor changes in the stance of monetary policy were implemented, but some other strategic changes were made. From September the inflation target was formulated in terms of CPIF rather than CPI. As mentioned, this had been suggested by Goodfriend and King (2016), but was also a confirmation of a practice that had developed over several years.<sup>68</sup> In December, the Board decided to increase the holdings of government bonds, temporarily, in 2018 and the beginning of 2019. The reason was that large maturities would occur in 2019. The Riksbank had earlier decided to reinvest maturities and coupon payments until further notice, and the Board wanted to maintain the Riksbank's presence in the market and keep a relatively even purchase rate. In December 2017 the Board also presented its exit strategy, "a gradual normalisation of monetary policy", and how the plan compared to those of the Fed and the ECB. Generally, the plans were to raise the policy rates first, since they were constrained by the effective lower bound, before reducing asset holdings. The Riksbank continued to express concerns about financial stability risks, but did not see the expansionary monetary policy as a risk for the functioning of the government bond market or income and wealth distribution. The latter problem had been raised in the debate on monetary policy, given the increase in asset prices.

Inflation remained close to target in **2018**, and inflation expectations also converged to 2 per cent. The development on the labor market was strong, and certain shortages were even noted, despite an aggregate unemployment level of around 6 per cent (the lowest level since the GFC).<sup>69</sup> The overall level of resource utilization was estimated to be higher than normal. The policy rate was eventually

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<sup>64</sup> Governor Ingves also argued that the Riksbank should get an extended and more explicit responsibility for financial stability, and even that the Riksbank and the Financial Supervisory Authority should be merged. See Ingves (2016, 2017).

<sup>65</sup> The differences in views are reported in the published minutes from the Board's meetings, and summarized in the annual reports to the parliament with "Account of monetary policy".

<sup>66</sup> The Riksbank published a report on the experiences from publishing interest rate forecasts in 2017, see Sveriges Riksbank (2017). Goodfriend and King also made recommendations about changes in the Riksbank Act. A decision to review the Act was taken by the Government in December 2016.

<sup>67</sup> See e.g. Nessén and Söderström (2001) and Hansson et al. (2008).

<sup>68</sup> The Riksbank also introduced a variation band of 1 – 3 per cent intended to show that monetary policy cannot steer inflation in detail. However, and in line with the experiences of the band declared in the original formulation of the inflation target from 1993, the policy relevance of the interval has been unclear.

<sup>69</sup> In e.g. the "Account of monetary policy 2018", the Riksbank noted that the average unemployment rate reflected an unemployment rate among Swedish born persons of less than 5 per cent, and an unemployment rate among foreign born of around 15 per cent.



raised, somewhat later than previously expected, from negative 0.50 per cent to negative 0.25 per cent in December, the first increase since 2011. But, at the same meeting, the Board also lowered the forecast for the policy rate. No changes in the plan for the development of asset holdings were made. The underlying inflation pressure was still judged to be weak, as reflected e.g. in low wage increases.<sup>70</sup> Only a cautiously less expansionary policy was anticipated, to maintain inflation and inflation expectations close to the target. Financial stability risks were still viewed as primarily caused by structural problems, for instance in the Swedish housing market. The Riksbank also noted that high household debt at variable interest rates had made the households more sensitive to changes in monetary policy and to other shocks to the financial system.

Economic growth was expected to decline in **2019**, both globally and in Sweden. But the slowdown was somewhat stronger than expected. Resource utilization in Sweden decreased, to a more normal level. Unemployment rose, but this reflected an increase in labor supply (labour force participation) and a stable level of employment.<sup>71</sup> Inflation was somewhat lower than expected, partly due to lower energy prices. Measures of underlying inflation were more stable, or even increased, but inflation expectations declined again. The development thus partly confirmed the relevance of the risks for continued low inflation that the Riksbank had expressed worries about since 2015. The Riksbank's forecasts of the policy rate were revised downwards during the year, but the policy rate was raised from negative 0.25 per cent to zero in December. At this time, the next increase in the interest rate was not expected to take place until two years later, in the beginning of 2022. A new decision to purchase government bonds was taken in April, but the ambition was not to make monetary policy more expansionary, but to keep the level of bond holdings at about the same level as in 2018.

The development of the krona received extra attention during 2019. In their annual evaluation of the Riksbank's monetary policy, the Finance Committee noted that the Riksbank had not forecasted the krona's depreciation during 2018 and assumed that the bank would review its analyses of, and communication about, the krona's development. During 2019 the Riksbank published several studies of the krona's dynamics and also commissioned a report by international experts.<sup>72</sup> Generally speaking, the analyses suggested that the depreciation of the real exchange rate over time partly could be explained by real factors such as terms of trade, productivity and savings. But in real terms the krona appeared to be "undervalued". Monetary policy has probably contributed to this, via effects on the nominal exchange rate.<sup>73</sup>

The Riksbank's overall assessment of the effects of quantitative easing has been that it has contributed to lower interest rates, a weaker exchange rate, a stronger development of the real economy and higher inflation.<sup>74</sup> Many formal analyses have been published about the first link in the transmission mechanism, the effects on market interest rates. The studies published in "real time" indicated that the Swedish experiences in this regard have been quite similar to those in other countries. In line with the international experience, less analyses have been made of the second step, the effects of quantitative easing on real economic activity and inflation (see e.g. BIS, 2023).<sup>75</sup>

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<sup>70</sup> The increase in CPIF in 2018 was close to target, in line with the forecast from December 2017, but the increase in CPIF excluding energy was 0.5 percentage points lower than expected. During the year the Riksbank made special efforts to analyse "core"/"underlying" inflation, the consequences for inflation of the development of the exchange rate, possible "side effects" of the expansionary monetary policy (on e.g. the functioning of the bond market or income distribution), and the relevance of climate change for central banks. The low wage growth led to a discussion about the standard-setting role of the wage agreements in the industrial sector since 1997. See "Account of monetary policy 2018" for further references.

<sup>71</sup> Statistics Sweden revised the labour market statistics during 2019 due to measurement problems. The revision showed a less dramatic increase in unemployment than the first data. See e.g. "Account of monetary policy 2019".

<sup>72</sup> The report was published in 2021, see Bacchetta and Chikhani (2021). The Riksbank's analyses are summarized in "Account of monetary policy 2019". Belfrage et al. (2023) provide an updated presentation of the discussion.

<sup>73</sup> In addition to the Riksbank's review of its analyses of the krona, the bank during 2018 - 2019 also devoted significant resources to analyses of structural changes, e.g. on the labour market. See e.g. Ingves (2019), Jonsson and Theobald (2019), Westermark (2019a), and the summary in "Account of monetary policy 2019".

<sup>74</sup> See e.g. the foreword by the Board in Andersson et al. (2022).

<sup>75</sup> References to and summaries of the studies of the effects of the Riksbank's purchases of government bonds can be found in the Accounts of monetary policy 2016 – 2018 and Andersson et al. (2022).

#### 2.4.4 Responding to a pandemic and war, 2020 – 2022

During 2020 – 2022, monetary policy in Sweden, as in essentially all other countries, faced difficult and extremely unusual challenges. First, the corona virus spread rapidly around the world in January and February 2020, and WHO declared that this was a pandemic on 11 March 2020. Second, Russia invaded Ukraine in February 2022, which had large effects on inflation in many countries.

GDP in Sweden decreased by 3 per cent in **2020**, the forecast made in December 2019 was an increase of 1 per cent. It may be hard to understand, ex post, how uncertain the situation was during the first year of the pandemic, but an illustration is given by the fact that in the Monetary Policy Report in April 2020 no main forecast scenario was presented. Instead, two hypothetical scenarios with GDP falling by either 6.9 per cent or 9.7 per cent were presented. In the July report the expected fall in GDP was 4.8 per cent and in November 4.2 per cent. The effects of the pandemic on economic activity thus turned out to be somewhat less severe than expected during the year.<sup>76</sup> Since the pandemic itself was not milder than expected (the situation improved in the beginning of the summer, but a second wave hit during the autumn), the relatively good economic outcome can probably partly be explained by the responses of fiscal and monetary policy (both in Sweden and abroad), although forecast errors and the difficulty in understanding the economic relationships in the unusual circumstances may also have been involved of course. In December 2019 the Riksbank expected the government budget to be balanced during 2020 (zero government net lending), but the outcome was a deficit amounting to 2.8 per cent of GDP.<sup>77</sup> The Riksbank did not lower the policy rate into negative territory this time, but kept it constant at zero. During 2020 the Board however decided (in March, June and November) to increase the Riksbank's domestic (SEK denominated) asset holdings from around 300 billion SEK to around 1000 billion SEK.<sup>78</sup> Of the increase in asset holdings, around 21 per cent was government bonds, 58 per cent was covered bonds, and 15 per cent was municipal bonds. Purchases of corporate bonds and commercial paper were relatively small (45 billion SEK, i.e., around 6 per cent). In relation to GDP, and in comparison to other countries, the increase in the Riksbank's balance sheet was not unusually large – see Figure 11. But since the outstanding government debt is relatively small, the Riksbank's holdings of government bonds approached almost 50 per cent of the outstanding stock (see Andersson, et al., 2022).<sup>79</sup>

CPIF inflation fell from 1.7 per cent in 2019 to 0.5 per cent in 2020, whereas the forecast (in December 2019) had been that inflation would be unchanged. It was particularly energy prices that increased slowly. The pandemic also led to changes in the consumption pattern that made it more difficult to measure inflation in a consistent way, but various measures of “underlying” inflation showed a significant decline.<sup>80</sup> Five-year inflation expectations fell drastically during the spring but then increased slowly and converged to the levels of short-term expectations at rates slightly below the target.<sup>81</sup>

The Board had been somewhat divided about purchases of government bonds during 2016, with a minority arguing for 15 – 75 billion SEK less purchases than the majority's decisions (to raise holdings to 275 billion SEK). The large scale purchases during 2020 were decided almost unanimously. One

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<sup>76</sup> Behind the moderate fall in total production and employment, there were however large differences between different sectors of the economy. The service sector and employees with fixed-term contracts were severely hit.

<sup>77</sup> The data on outcomes for GDP and government net lending in this paragraph are taken from the Monetary Policy Report in November 2021. Such data are continuously revised.

<sup>78</sup> Between 12 March and 21 April, the Riksbank held five extraordinary monetary policy meetings. In addition to the asset purchases, the Riksbank also made several changes in its conditions for lending to the banks, including a funding-for-lending facility and loans in US dollars. For more detailed descriptions, see e.g. Gustafsson and von Brömssen (2021), Flodén (2022) and Andersson et al. (2022).

<sup>79</sup> In the markets for municipal and covered bonds, the Riksbank's share reached around 20 per cent, and the share of corporate bonds around 2 per cent. The analyses by Akkaya (2023a, b) use data on holdings of bonds in relation to outstanding debt rather than GDP.

<sup>80</sup> Given the unusual nature of the downturn in the economy, the Riksbank started to collect new real-time indicators and made more frequent interviews with firms during 2020.

<sup>81</sup> Inflation expectations declined also during 2019, see e.g. “Account of monetary policy 2020”.

Board member objected against the last decision to increase asset holdings by 200 billion SEK in November 2020, and another member advocated an increase of 100 billion SEK.

Interest rates on municipal, covered and especially corporate bonds increased in March 2020 but then gradually declined to pre-pandemic levels by the end of the year. The problem during the spring was not, however, only the level of the interest rates as such, but also the risk that some markets would cease to function, due to the large uncertainty. The Riksbank's measures were thus motivated by both price stability and financial stability objectives (e.g., stable access to liquidity and credit, and market functionality).

The Riksbank's approach to the pandemic can be viewed as a continuation of the risk management approach applied since 2015, rather than the certainty-equivalent strategy characterizing text book versions of inflation targeting. The development of inflation and production was viewed as very uncertain and "fraught with downside risks in both the shorter and longer terms" ("Account of monetary policy 2020", p. 24), which led to the conclusion that there was "a clear need for the powerful measures taken to remain for a good while" (p. 23). In addition to the persistent risks for too low inflation and inflation expectations, the pandemic also involved risks for long-lasting negative effects on production and employment.<sup>82</sup>

During 2020 (and 2021), issues in monetary policy that had been raised earlier continued to be discussed, both within and outside the Riksbank, in particular the roles of monetary and macro-prudential policy for financial stability, the distributional effects of monetary policy, the role of the standard-setting wage agreements in the manufacturing sector, the interaction between fiscal and monetary policy, and the implications for monetary policy of climate change.<sup>83</sup> As with the QE measures implemented 2015 – 2016, the Riksbank's overall assessment was that the asset purchases (and other measures) undertaken during 2020 contributed to avoiding a severe financial crises and to dampening the fall in economic activity and inflation. But the monetary policy response to the pandemic raised a number of new questions, also in real time:

- Should the policy rate have been lowered to negative territory?
- Was it appropriate for the Riksbank to purchase also other bonds than government bonds?
- Was it necessary to continue with the asset purchases (in particular the purchases of corporate bonds) during the second half of the year, when the situation on financial markets had stabilized?

Just like with the QE measures undertaken 2015 – 2017, there have been several analyses of the effects of QE 2020 through the first link in the transmission mechanism (market interest rates), roughly indicating that the Swedish experiences have been similar to those in other countries (see Andersson et al., 2022). But, again, less analyses have been made of the effects on real economic activity and inflation. One such analysis, by Akkaya et al. (2023b), suggests that the effects have been small, using the same methods as in the study of government bond purchases 2015 – 2017 in Akkaya et al. (2023a). The authors however note that "our approach provides a low estimate of the effects as it does not capture that the Riksbank's asset purchases reduced the likelihood of a financial crisis".

The implications of QE for the financial risks to the Riksbank itself were not much discussed. However, in February 2020, i.e., before the pandemic, the Riksbank delivered its Annual Report to the parliament, which included the following message (p. 66 – 67):

"The purchases of Swedish government bonds made by the Riksbank over the period 2015–2019 also affect its income. The overall net effect of government bonds on the financial result depends on how

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<sup>82</sup> "Account of monetary policy 2020" includes an article on the long term effects on the pandemic and further references to analyses of this issue. See also Laséen (2021).

<sup>83</sup> See "Account of monetary policy, 2020" for a review of the Riksbank's assessments and the debate on monetary policy in Sweden in 2020. Similar questions have been raised in many other countries. Andersson et al. (2021) and Amberg et al. (2021) are examples of reports from the Riksbank on the effects of monetary policy on income distribution. The Board decided on a sustainability strategy in December 2020 (Sveriges Riksbank, 2020).

the repo rate progresses in relation to return on the bonds purchased by the Riksbank. The bond purchases were funded by increased deposits in SEK from the banks. The cost for this is determined by the interest rate on the Riksbank's deposits in the form of Riksbank Certificates (the repo rate) and deposit facilities (the repo rate minus 0.10 percentage points). The repo rate was negative in 2019, meaning that deposits from the banks made a positive contribution to the Riksbank's result. In addition, in 2019, Swedish long-term bond yields fell, increasing the value of the Riksbank's government bonds. Even with the present repo rate of 0 per cent, the Riksbank's borrowing is cost-free. If the repo rate were to rise, the cost of funding the holdings of government bonds would increase, impairing the Riksbank's result.

Overall, the low level of interest rates means that the total return on the Riksbank's assets can be expected to be low over the next few years. Over the coming five-year period, the Riksbank is therefore expected to achieve a result that is significantly lower than was the case over the previous five-year period. If the krona appreciates heavily or if there is a strong rise in interest rates, the Riksbank may make significant losses. In addition, in the event of a heavy interest rate rise, the Riksbank's ability to make dividend payments to the government will decline temporarily and dividends may cease entirely in some years."

This risk of significant losses was thus noted, in qualitative terms, before the QE operations implemented during 2020.<sup>84</sup>

Economic activity and inflation recovered more rapidly than expected (both in Sweden and abroad) during **2021**, as the spread of the virus decreased (partly due to vaccinations) and various restrictions could be lifted. GDP recovered as fast in Sweden as in the US but faster than in the euro area. Resource utilization was considered to be close to normal by the end of the year.<sup>85</sup> Sweden was not hit as badly as e.g. the US or Germany by the new wave of the virus during the second half of the year, although some restrictions were re-introduced in Sweden during the autumn. The situation was thus considered to be very uncertain, and the expansionary stance of monetary policy was kept unchanged during the year. The policy rate was kept at zero and the asset purchase programme was pursued according to earlier plans.

Inflation increased rapidly during 2021 (although less than in the US and the euro area), but was also very volatile. A difficult question for the Riksbank Board was how much of the change in inflation that should be viewed as temporary or persistent. CPIF inflation was as low as -0.4 per cent in April 2020 but above 4 per cent by the end of 2021.<sup>86</sup> The increase in inflation was partly related to the increase in demand when restrictions were lifted, in combination with bottlenecks in production capacity (both domestic and global) caused by the pandemic. But a large part of the increase in inflation was a reflection of an extreme development of energy prices. The energy price component of Swedish CPI fell by almost 10 per cent in 2020 and increased by almost 20 per cent in 2021 (see "Account of monetary policy 2021"). The average increase in CPIF inflation during the year was 2.4 per cent, but CPIF excluding the energy component increased by 1.4 per cent, and the median increase in the Riksbank's various measures of underlying inflation was 1.8 per cent. In this situation, the Riksbank's assessment was that the increase in inflation was largely temporary and that an expansionary monetary policy was needed to support the economic recovery and keep inflation close to the target in the years to come.

During 2021, the Riksbank communicated that it could be willing to allow inflation to temporarily overshoot the target, since this might help to anchor inflation expectations after a long period of inflation below the target. Although the Riksbank did not change its strategy to "average inflation

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<sup>84</sup> The risk reports presented to the Board have included measures of market risk and also stress tests showing the consequences of e.g. higher interest rates. See also the box on "The Riksbank's complementary monetary policy measures" in the Monetary Policy report from February 2015 and the speech by Flodén (2016).

<sup>85</sup> The situation on the labour market was however difficult to assess because of changes in the methods for collecting data on labour supply and hence unemployment.

<sup>86</sup> This was still lower than in the euro area, the UK and the US, where inflation was around 5 – 7 per cent by the end of the year.

targeting”, the forecast of policy that was communicated was that asset holdings would be kept unchanged during 2022, and the policy rate not raised until the latter part of 2024.<sup>87</sup> The Riksbank obviously was willing to take the risk to overshoot the inflation target, to lower the risk that inflation (and inflation expectations) would turn out lower than the target.<sup>88</sup> The increase in the price pressure was however noted in September: “Supply problems were expected to become a little larger and slightly more persistent” (“Account of monetary policy 2021”, p. 22).<sup>89</sup>

Like in many other countries, inflation increased rapidly in Sweden during **2022**. CPIF-inflation increased from 4 per cent in the beginning of the year to 10 per cent by the end of the year. Average inflation during the year was 7.7 per cent (8.4 in terms of CPI), the highest level since 1991. Since the break-down of the Bretton Woods system, CPI-inflation has only been higher during 1974 – 1978 (OPEC I and expansionary fiscal policy), 1980 – 1983 (OPEC II and expansionary fiscal policy) and 1990 – 1991 (inflation-bias in stabilization policy, overheated economy and higher indirect taxes).

In addition to the global problems with excess demand and supply restrictions related to the pandemic (and new restrictions introduced in China), Russia’s invasion of Ukraine in February 2022 caused further disruptions to energy and commodity markets that raised inflation even more. The energy component in Sweden’s CPIF index increased by 33 per cent in 2022, and food prices increased by 9 per cent. Inflation in the US was around 8 per cent already before the war in Ukraine, whereas inflation in Sweden was then around 4 per cent. Inflation thus increased earlier, and for partly different reasons, in the US compared to Sweden and Europe. In short, the differences seem to be related to the fact that Europe is more dependent on imported energy, that wage and price stickiness is higher in Europe, and that fiscal policy was more expansionary in the US.<sup>90</sup>

The Riksbank’s assessment was that resource utilization was higher than normal in 2022. Unemployment fell from (on average) 8.8 per cent in 2021 to 7.5 per cent in 2022, but wages continued to increase relatively slowly. In contrast to the earlier periods of high inflation, before the regime shift in stabilization policy in the 1990s, domestic costs were not a primary factor behind the increase in inflation in 2022 (although unit labor costs increased because of a decline in productivity).

The Bank of England began its policy tightening in December 2021<sup>91</sup>, the Fed in March 2022, the Riksbank in April 2022, and the ECB in July 2022. The Riksbank’s forecasts of both inflation and the policy rate were revised upwards during the year.

At the Board’s monetary policy meeting on 9 February (i.e., before Russia invaded Ukraine on 24 February), the main scenario was that CPIF inflation would fall back during 2022 – the increases in energy and food prices were expected to be temporary, in line with the forecasts from November 2021. There were only marginal revisions of the forecasts for CPIF (excluding the energy component) and GDP. It was assessed that monetary policy needed to remain expansionary. The policy rate was kept unchanged at zero and asset holdings were expected to be roughly unchanged in 2022. With Russia’s invasion of Ukraine it quickly became obvious that the forecasts had to be changed and policy tightened. In March CPIF inflation had reached 6.1 per cent and in April the Board decided to raise the policy rate from zero to 0.25 per cent. The forecast involved further increases during the year, but at a rather moderate pace.

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<sup>87</sup> Some lending facilities and changes in collateral requirements that had been introduced in the beginning of the pandemic were however revoked from September 2021.

<sup>88</sup> It deserves to be noted that the Federal Reserve, in its 2019 review of its monetary policy, included research on average inflation targeting from the Riksbank, Nessén and Vestin (2005), among its sources of inspiration. See Altig et al. (2020).

<sup>89</sup> The debate about Swedish monetary policy 2021 (see “Account of monetary policy 2021”) was very similar to the discussion during 2020 summarized above, so no further details are given here.

<sup>90</sup> See e.g. Guerrieri et al. (2023).

<sup>91</sup> Bank of England raised its Bank Rate from 0.10 per cent to 0.25 per cent, as there had “been significant upside news in core goods and, to a lesser extent, services price inflation. Bank staff expect inflation to remain around 5% through the majority of the winter period, and to peak at around 6% in April 2022” (press release, 16 December, 2021).

At the monetary policy meetings in June, September and November, the policy rate was raised by 0.5, 1.0 and 0.75 percentage points respectively, to reach a level of 2.5 per cent by the end of the year. The Board also decided to reduce asset holdings during the second half of the year, by not reinvesting maturing bonds. The discussions about monetary policy during the year (both inside the Riksbank and outside) was not about if monetary policy should be tightened, but about the relative importance of various inflation shocks, why the Riksbank had underestimated inflation<sup>92</sup>, and whether the policy rate should have been raised earlier and/or more gradually. Another question concerned whether the high household indebtedness implied that monetary policy would have stronger effects than normally assumed. There was also a discussion about if the rapid increase in inflation had changed firms' price setting behaviour and the formation of inflation expectations more fundamentally, after a long period of very low and (relatively) stable inflation.<sup>93</sup> One of the Riksbank's conclusions (see "Account of monetary policy 2022", p. 26) was that alternative scenarios could have played a larger role in monetary policy decisions and communication.<sup>94</sup> Given the development during 2022, the Riksbank also saw reasons to look more closely at the indirect effects of energy prices and on the impact of exchange rate movements. The krona depreciated (trade-weighted, KIX index) by 7.5 per cent between the end of 2021 and the end of 2022.

The rapid increase in interest rates during 2022 also resulted in large financial losses on the Riksbank's bond holdings. The fall in the market values meant that the Riksbank's equity became negative.<sup>95</sup>

### 3. Macroeconomic development in Sweden after the end of Bretton Woods: a comparative analysis

#### 3.1 Price and real stability

It is natural to start a description of the evolution of monetary policy by looking at **inflation**. In Figure 4 we can see that inflation was much higher during the pegged-but-adjustable regime than during the Bretton Woods era. Many other countries have had the same experience, although not Germany or Switzerland – see Table 1. During the inflation targeting regime, inflation in Sweden came down and also became more stable, even lower and more stable than during Bretton Woods (until 2021). But again, this happened also in other countries, so it was probably not a result of domestic monetary policy only. It is especially interesting to compare the development of inflation rates in Sweden and Denmark given that these two countries have chosen different monetary policy strategies – see Figure 12. As the Figure shows, inflation rates in the two countries have followed each other quite closely.

When monetary policy was reformed in many countries during the 1990s, central bank independence increased – and continued to increase during the first decade of the 21<sup>st</sup> century, see Dincer and Eichengreen (2014) – and price stability was given higher priority. In Sweden, as discussed in section 2, low unemployment was given higher priority than price stability during the pegged-but-adjustable regime. So it would be natural to expect the inflation targeting regime to be characterized not only by higher price stability but also higher real instability. The implication of the change in monetary policy for economic growth is harder to predict, especially if we believe in long run neutrality of money.

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<sup>92</sup> As shown in the "Account of monetary policy 2022", Figure 30, forecasts made by other forecasters in the end of 2021 also underestimated inflation over the coming year.

<sup>93</sup> Ewertzh et al. (2022) study Swedish microdata and find that the frequency of price changes increased over time already before the pandemic (2010 – 2018).

<sup>94</sup> This was not a new idea. It was suggested by Leeper (2003). Quantitative alternative scenarios were thereafter routinely presented in the Monetary Policy Reports 2007 – 2015 (mainly based on the Riksbank's DSGE model Ramses; see Adolfson et al. (2007, 2008), Christiano et al. (2011) and Adolfson et al. (2013)). Both before (in the Inflation Reports) and after that, risks have always been discussed (and emphasized) verbally, but only occasionally in the form of explicit quantified alternative scenarios.

<sup>95</sup> For more detailed information about this, see the Riksbank's Annual Report 2022, Kjellberg and Åhl (2022) and Nordström and Vredin (2022). Nordström and Vredin compare the Riksbank's losses with those of some other central banks.

Looking at the development of **GDP** (per capita) in Sweden – see Figure 5 and Table 2 – we can see that the volatility has indeed been higher during the inflation targeting regime than during both previous regimes. GDP growth has been higher under inflation targeting than during the “stagflation” that characterized the pegged-but-adjustable regime – but not as high as during the Bretton Woods era. In Denmark, GDP growth was not as weak as in Sweden 1974 – 1992. It has on the other hand been somewhat lower since then. This may partly reflect a generally weak growth in the euro area, which Denmark has tied its monetary policy to, but it may also reflect that Sweden after two bad decades made reforms that led to “catching-up” effects – see Figure 3 and Table 2. There have been smaller differences in the volatility of GDP growth across regimes in Denmark than in Sweden.

That GDP growth was both higher and more stable during Bretton Woods, and inflation lower, than during the first twenty years after the breakdown of the system is true also for other countries than Sweden – Table 2 includes data from Germany and Switzerland. “Stagflation” was a global phenomenon during the 1970s and 1980s. The benign development during Bretton Woods probably partly reflects a global catch-up process after the Second World War.

GDP growth and volatility does not necessarily give a full picture of the normal secondary objective for inflation-targeting central banks, namely capacity utilization. How the latter should be measured is far from obvious, but measures of “output gaps”, employment and unemployment levels are frequently used. Looking at the **employment** rate in Figure 8, the most striking observation is the large fall in employment in Sweden in connection with the crisis in the early 1990s. As noted in section 2.3 above, unemployment increased rapidly during the crisis and has been persistently higher since then, than before the crisis. The employment rate shows another picture. The employment rate fell more during the crisis, by around 10 percentage points. There was also a fall in labour supply which made the increase in unemployment somewhat smaller. But the employment rate has shown a stronger recovery than the unemployment rate. The employment rate is now at about the same level as in the 1980s. Employment in Sweden was higher than in Denmark during the 1980s, became significantly lower after the crisis in the 1990s, and in recent years the employment rate in the two countries is roughly the same. The employment rate has thus been more stable in Denmark. It is unlikely that this can be explained by differences in monetary policy. There are substantial structural differences between the Swedish and Danish labour markets, with the Danish labour market generally seen as being more flexible, partly due to a policy of “flexicurity”.

Measures of the **output gap** are very uncertain, for several reasons. The levels of GDP and other measures of production cannot be observed in real time but only estimated afterwards, and the measures are continuously revised ex post. To compute an output gap, one also has to make assumptions about a trend or potential level. The output gaps for Sweden and Denmark depicted in Figure 13 are highly correlated. The countries appear to have experienced booms and recessions at the same time. The volatility of the output gap has been higher in Sweden during the inflation targeting regime than under Bretton Woods, but not higher than during the pegged-but-adjustable regime.

In summary, the Swedish experiences from the inflation targeting regime, with its relatively larger weight on price stability than real stability, appear to have been broadly as expected: inflation has become lower and more stable, while the volatility of real economic activity has become higher. That inflation expectations have been so stable despite deviations of inflation from target – see Figure 10 – shows that the inflation targeting strategy has been very successful in achieving its main objective. That the volatility of real economic activity has increased largely reflects a number of specific crises. The largest negative output gaps, which in Sweden also are larger than the peaks in absolute numbers, have been recorded in connection with the crisis in the early 1990s, the GFC 2008 – 2009 and the pandemic 2021. It does not, therefore, seem reasonable to conclude that the increased real volatility primarily is a reflection of the monetary policy strategy. Rather, the increased frequency of crises, compared with the 1970s and 1980s, is probably related to the liberalization of financial markets and the general globalization.

### 3.2 Other relevant developments

As noted above, since the GFC 2008 – 2009 and onwards, the Riksbank has had to balance the risk of too low inflation against the risks associated with financial imbalances (increasing house prices and private debt). There was a large fall in **house prices** in Sweden during the crisis in the early 1990s, around 20 per cent, but since then house prices have increased steadily and faster than in other countries (except for Denmark) – see Figure 14. Low interest rates have of course contributed to this, but interest rates have been low also in other countries, and capital mobility has lowered interest rate differentials between countries, so there must be other explanations for the rapid increases in house prices in Sweden. Many Swedish economists in addition to the Riksbank have over the years pointed to substantial imperfections on the Swedish housing market.

Sweden and Denmark share some experiences that are not so commonly observed in other countries. The countries' total net financial savings, as reflected in the **current accounts** – Figure 15 – have been positive since the early or mid-1990s. Behind these net aggregate savings at the country level, lie steady decreases in **government debt** (Figure 6) and steady increases in **private debt** (Figure 7). It is hard to believe that households are completely “Ricardian”, but it is also hard to believe that the increase in private debt is unrelated to the decrease in government debt and the increase in national net financial wealth. We think that this is an important subject for future research.<sup>96</sup>

The high level of total national financial savings, reflected in systematic current account surpluses, can partly explain the weakening of Sweden's real exchange rate since the mid-1990s – see Lane (2007) and Bacchetta and Chikhani (2019). That Denmark's real exchange rate has been more stable – see Figure 2 – despite the country's current account surpluses, may be explained by differences in the development of the **terms of trade** – see Figure 16. While Sweden has experienced a falling trend in the terms of trade (strengthening the depreciation of the real exchange rate, according to standard theories), Denmark's terms of trade have improved (dampening the negative effect on the real exchange rate from the current account surplus).

## 4. Themes in policy discussions during inflation targeting

In this section, we comment on some recurrent themes in the discussions about monetary policy under inflation targeting that we noted in our chronology. The observations are not unique for Sweden, and are therefore potentially not new information for experts on monetary policy, but we think they deserve to be presented in a review of the experiences of monetary policy during the last fifty years.

### 4.1 How should normal objectives under inflation targeting be defined?<sup>97</sup>

The idea that monetary policy should have a dual mandate and strive to stabilize both inflation and real economic activity has broad support among central bankers, academic economists and politicians, all over the world. Price stability is often viewed as the primary objective and real stability as secondary, although this common view is hard to formalize and also not consistent with the text book models of inflation targeting. In these models, the central bank can assign different weights to price stability and real stability, but except in the case of strict inflation targeting, where real stability has zero weight, one objective is not primary and another secondary. In the new Riksbank Act,

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<sup>96</sup> There has been a similar development in Norway, where increased public wealth (the “oil fund”) has been associated with increased private debt.

<sup>97</sup> An earlier discussion of the measurement problems mentioned in this section, and further references, can be found in Vredin (2015). There, the main point was that the degree of financial stability is not necessarily harder to measure than the degrees of price and real stability.



effective from 2023, the objective of real stability has been clarified and enhanced compared to the previous Act. In a recent review of the Reserve Bank of Australia (de Brouwer et al., 2023) the recommendation is that the two objectives should have equal weights.

Against this background, it is noteworthy how difficult it has been for the Riksbank – and no doubt also other central banks – to nail down appropriate definitions of price stability and real stability. How can one be sure that inflation should be 2 per cent and capacity utilization “normal” (say, zero in the case of an output gap, and a “natural” rate of unemployment) without being certain about how these variables should be defined and measured? We have no criticism to deliver on this point, because it is indeed hard to combine good theory and measurement on these points. But we do think that the fundamental uncertainty also should be more reflected in discussions of monetary policy, for example when policy and deviations from targets are evaluated, or when alternative objectives for monetary policy are discussed. The discussions often seem to be based on overly optimistic assumptions about the precision in the measurement methods.<sup>98</sup>

The Riksbank early in the inflation targeting regime recognized the need to analyse several different measures of inflation. The concept of underlying (or core) inflation is often used to describe the part of inflation that is especially relevant for monetary policy, as it better reflects the more persistent part of inflation than other measures. But no single measure of underlying inflation has proven to be most useful all of the time during the inflation targeting regime. Often CPI inflation has been dominated by movements in energy prices that have, correctly, been viewed as temporary and therefore not so important to counter-act with monetary policy. But sometimes these movements have turned out to be persistent and therefore requiring a monetary policy response. At other times changes in taxes or food prices, or methodological changes in inflation computations, have been dominant. This is obviously a challenge for inflation targeting, not only for policy making, but also for communication.

The Riksbank has tried to communicate the flexibility of the inflation target through the use of a tolerance interval. Although intuitively very reasonable, this tool proved to be of low importance and was therefore abandoned in 2010. A variation band was re-introduced in 2017 but does not seem to have played any important role, neither for policy making nor communication.

The problem with measuring capacity utilization is even more severe than inflation measurement. In booms and recessions it is often quite easy to tell whether capacity utilization is above or below normal. Different indicators often tell the same story. But sometimes they do not, with unclear implications for monetary policy. For instance, in the period 2000-2005 productivity growth was unexpectedly high in Sweden. Capacity utilization measures based on GDP or production indicated above normal utilization while labour market measures indicated below normal utilization. An underlying reason for this is that the theoretical definitions of potential GDP, and therefore output gaps, are seldom the same as the measurements used in practice. Often potential levels are measured using trends in the time series which do not pick up for instance abrupt shifts in productivity. In addition, data on production and employment are frequently revised ex post (partly due to methodological changes), so pictures of for example the output gap, as in Figure 13, can look quite different in real time compared to afterwards. And in the case of employment, how can one know what a normal level is, when the data look like in Figure 8? Again, this is not a critique of how monetary policy has been conducted, but it shows that there is much room for disagreement about how monetary policy should be designed.

#### 4.2 The importance of supply shocks

Discussions about monetary policy are often based on some version of the Phillips curve, where inflation is determined by inflation expectations, capacity utilization and unpredictable supply shocks. When there are no supply shocks, there is a “divine coincidence” for monetary policy: the

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<sup>98</sup> This argument has been made more generally and thoroughly by, among others, Faust and Leeper (2015).

stabilization of inflation is not in conflict with the objective of stabilizing capacity utilization. When there are supply shocks, or when there is a risk that inflation expectations might deanchor, monetary policy faces a trade-off. Stabilizing inflation may require more volatility in capacity utilization. This is one reason why inflation targeting should not be strict; not “too conservative”, as pointed out already by Rogoff (1985), but “flexible”, in the sense of e.g. Svensson (1998). Some weight should be put also on the development of capacity utilization.

Our chronology shows that it has often been difficult for the Riksbank to determine whether the changes in inflation are mainly driven by demand shocks or supply shocks, and therefore to determine the appropriate response of monetary policy.

To shed further light on the relative importance of demand and supply shocks, we have used information from the Riksbank’s forecasts of inflation and GDP published in Inflation Reports and Monetary Policy Reports 1992 – 2022. We look at the forecast revisions in the last reports from each year. In Figure 17 we can for example see that in the Monetary Policy Report from November 2022, the forecast of GDP 2022 growth was revised downwards by 1.1 percentage point compared to the forecast from November 2021. The inflation forecast was revised upwards by 5.5 percentage points. This suggests that the development 2022 was dominated by negative supply shocks.<sup>99</sup>

The data presented in Figure 17 suggest that the divine coincidence (when demand shocks dominate) only occurs 60 per cent of the time. We think it is fair to say that not only Sveriges Riksbank, but also other inflation targeting central banks, have invested too little resources into understanding the mechanisms on the supply side of the economy compared to the mechanisms on the demand side.<sup>100</sup>

#### 4.3 The role of the exchange rate

The chronology clearly shows that exchange rate flexibility has not insulated the Swedish economy from foreign shocks. Moreover, during the first ten – twenty years after Bretton Woods the possibility to adjust the exchange rate seems to have increased the frequency of domestic disturbances, since the commitments to low inflation and low public debt were weakened. Inflation and debt increased, and monetary policy was used to temporarily mitigate the imbalances created, through repeated devaluations of the currency. Fiscal and monetary policy was reformed in the 1990s, and a policy of exchange rate flexibility officially declared together with the inflation target in 1993. But this did not mean that the Riksbank could ignore the fluctuations in the value of the krona when deciding on monetary policy. Exchange rate fluctuations have implications for inflation, both through prices of imported products and through the impact of export demand and therefore capacity utilization in Sweden. Furthermore, the exchange rate always receives a lot of attention in the public debate on monetary policy. A weaker exchange rate is often seen as a sign of a weaker economy.

The krona’s long run depreciation mainly occurred during the pegged-but-adjustable regime. Between January 1973 and December 1993 the value of the krona fell by around 100 per cent versus a trade-weighted currency basket (see Bohlin, 2010). Since 1994 there has been no clear trend in the value of the krona (see Belfrage et al., 2023). But the krona has been quite volatile in comparison with other currencies, see e.g. Figure 1. As noted in our chronology, the Riksbank decided to intervene in the foreign exchange market in 2001 and was prepared to intervene in 2016 – 2019 (but did not). A testament to the importance assigned to the exchange rate for monetary policy in

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<sup>99</sup> The inflation data in Figure 17 are CPIF inflation from 2009 and CPI inflation before that. Data on forecast revisions are from Inflation and Monetary Policy Reports from 1999 and onwards, and from Jansson and Vredin (2003) before that.

<sup>100</sup> We are aware that in a proper general equilibrium framework, it is hardly meaningful to distinguish the demand side from the supply side, because everything affects everything. But the terms are so frequently used in discussions about macroeconomics so we are not embarrassed to use them here. It can also be noted that the recent review of the RBA (de Brouwer et al., 2023) suggested that more focus should be given to supply factors, just like Hansson et al. (2018) have suggested in the case of the Riksbank. One example of the Riksbank’s analyses of the role of the supply side is provided by Jonsson and Theobald (2019).

Sweden is that the Riksbank in 2005 and 2019 asked external researchers to study the weakness of the krona (see Lane, 2007, and Bachetta and Chikani, 2021).

It deserves to be emphasized that in an inflation targeting regime, there is no long run stable value for the nominal exchange rate – if the target is indeed formulated for the rate of inflation rather than the price level. An inflation target makes the price level and therefore also the nominal exchange rate non-stationary. Even if the real exchange rate is stationary, the nominal exchange rate will be non-stationary.<sup>101</sup> But inflation targeting central banks have typically had difficulties with accepting the instability of the nominal exchange, probably because its short run fluctuations have implications for inflation. The sources, persistence and pass through (to other prices) of exchange rate fluctuations have been a consistent headache for Riksbank economists, and obviously also for other central banks. Ilzetki, Reinhart and Rogoff (2019) have noted that “Even if central bankers’ communication jargon has evolved considerably in recent decades, it is apparent that many still place a large implicit weight on the exchange rate”.

#### 4.4 Other objectives and instruments

There is a large literature showing that higher welfare can be obtained if the monetary policy rule includes more variables than inflation and capacity utilization, such as a monetary aggregate. Inclusion of a nominal variable like the money stock allows the rule to capture some advantages of price level targeting compared to normal inflation targeting.<sup>102</sup>

A basic presumption for flexible inflation targeting is that price and real stability should be the only objectives of monetary policy. Many central banks have a dual mandate with this assignment. One exception is Norges Bank which has a triple mandate: price stability, financial stability and real stability. Norges Bank started to lean against financial imbalances in 2012 and a formal mandate that explicitly includes financial stability was given in a new Act from 2019.

As our chronology shows, the implications for monetary policy of financial stability risks has been a difficult question for the Riksbank to handle. During the Bretton Woods regime, the Riksbank administered the regulations of credit markets, which together with other regulations and supervision of the financial system implied that the risk of financial crises was low, but the risk of imbalances in the form of inefficient allocation of capital was high. Following the liberalizations in the 1980s, monetary policy was subject to extreme challenges during the financial crisis in Sweden 1990 – 1993 and the GFC 2008 – 2009. Financial market instability also had implications for monetary policy during the euro area debt crisis 2010 – 2012 and the pandemic crisis in 2020. In addition, domestic risks with the development of house prices and household debt led the Riksbank to lean against the wind, at least, officially in 2013, but according to our chronology to some extent also much earlier than that. The new Riksbank Act which is effective from January 2023 (and its preparatory work) is unclear about the implications for monetary policy of financial stability risks. On the one hand, it is argued that financial stability – in contrast to real stability – should not be a separate and tertiary objective for monetary policy. On the other hand, the Act allows the Riksbank to let financial stability conditions affect the targeted time it takes to reach the inflation target after a shock. In other words, the Riksbank can decide, based on concerns for financial stability, e.g. that it will not bring inflation back to target within two years, but rather within three or four years.

The recent review of the Reserve Bank of Australia recommends that the law should be explicit that the RBA has a responsibility for maintaining financial stability but not that there should be a triple mandate for monetary policy. The review’s recommendations are thus in line with the new Riksbank Act, but different from the new Norges Bank Act. In all likelihood this question will be discussed also in future reviews of the inflation targeting strategy.

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<sup>101</sup> In consequence, the studies by Lane (2007) and Bachetta and Chikani (2021) focused on the development of the real exchange rate.

<sup>102</sup> See e.g. Billi et al. (2023).

Financial market frictions may justify that financial stability is a separate, additional objective for monetary policy as demonstrated by e.g. Woodford (2012). Frictions on financial markets may also imply that the central bank can use other instruments than a short term policy rate, such as quantitative easing – see e.g. Gertler and Karadi (2013). The arguments for leaning against the wind therefore partly rely on similar foundations as the arguments for quantitative (and credit) easing. There is wide agreement among experts on central banking that QE and the use of monetary policy to deal with financial instability may be required in exceptional circumstances, e.g. when the policy rate is restricted by a lower bound or when there are unusual disturbances to the transmission mechanisms of monetary policy through the financial system. There is no agreement that leaning against the wind and QE should be implemented also in normal circumstances. It may however be difficult to know which circumstances that should be viewed as normal or exceptional, as shown by the Swedish experiences from inflation targeting 1993 – 2023 (and in particular during the fifteen years since the GFC).

QE is often described as “unconventional” monetary policy, together with forward guidance and negative policy rates. From a Swedish perspective, forward guidance is not unconventional as policy rate forecasts have been published since 2007 and are an important part of the inflation targeting strategy (as in New Zealand, Norway and the Czech Republic). If negative policy rates will be unusual also in the future, or whether the effective lower bound is significantly lower than zero is as yet unclear. Sweden’s experiences from the balance sheet extensions 2015 – 2022 do not seem to differ very much from other countries’ experiences – see e.g. Andersson et al. (2022).

#### 4.5 Central bank independence

The degree of central bank independence has varied over time and across countries, see Dincer and Eichengreen (2014). It is not a question only about optimal monetary policy, but it also involves important political questions, see e.g. de Haan and Eijffinger (2019).

Swedish politicians’ preferences regarding the appropriate degree of Riksbank independence have also varied over time. During the Bretton Woods era, the Riksbank was not independent at all. The Riksbank Board consisted mainly of politicians, the Governor was just a member of the Board, and often the Undersecretary of the Ministry of Finance was chairman of the Board. The Riksbank gradually became more independent during the 1990s, as low inflation was given higher priority in economic policy (see Heikensten and Vredin, 1998, 2002). The proposal in February 1993 for a new Riksbank Act, with an explicit price stability objective and increased independence did at first not get sufficiently broad political support. But a reformed Act with the same implications became effective from 1999, partly (or primarily?) in order to satisfy the EU Treaty, and thereby also to make it possible for Sweden to be part of the euro area.

In the following decade, it was often suggested, e.g. to the Swedish parliament’s Finance Committee, that there should be a new review of the Riksbank Act because the Riksbank’s responsibility for real stability had been downplayed in the Act from 1999. In 2010, the Riksbank’s Executive Board and Governing Council together suggested a broad review of the Swedish rules for the financial system (see Gernandt et al., 2010), against the background of the experiences from the GFC. In their review of the Riksbank’s monetary policy, Goodfriend and King (2016) argued for a review of the Riksbank Act, primarily in order to clarify the Riksbank’s responsibilities for the exchange rate regime and for financial stability. The government finally decided, in December 2016, to initiate a review of the Riksbank Act. According to the terms of reference, the committee should, inter alia, review the monetary policy objectives and means, the Riksbank’s responsibility for financial stability and the institutional independence of the Riksbank. The conclusions from the review were published in November 2019. The committee suggested that stability of the real economy should be a secondary objective of monetary policy, in addition to price stability. This was a codification of the practice of

flexible inflation targeting, but still a significant change compared to earlier law. Another suggestion was to make a separation between the monetary policy tools for price stability and the tools for financial stability. Furthermore, financial stability should not be an additional secondary (or primary) objective for monetary policy. The committee also suggested that the Riksbank should only be allowed to purchase other assets than government bonds in exceptional circumstances. The new Act, which became effective from 2023, explicitly gives the Riksbank a dual albeit lexicographical ordered mandate, for price and real stability. The Act also makes a distinction between monetary policy and financial stability policy, and introduces more restrictive rules for the Riksbank's asset purchases. The Riksbank has had a relatively high degree of independence compared to other countries (see Dincer and Eichengreen, 2014) but the Swedish parliament has opted to make the Riksbank's mandate more narrow than earlier.<sup>103</sup>

Throughout the history of central banking, price stability and financial stability have always been the important objectives (see Capie et al., 1996). Naming price stability the primary objective became more common when central banks became more independent in the 1990s. This is not hard to understand. The experiences of monetary policy when high employment was the primary objective were negative, financial stability had not been a problem for a long time (because financial markets had been heavily regulated), and a precondition for general acceptance for a high degree of independence may be that the mandate is narrowly defined. However, given the links between price, real and financial stability, and the importance of the central bank for the financial system, there are economic arguments for giving the central bank a wide mandate. But there are political arguments against.<sup>104</sup>

In the coming years, the degree of financial independence will also be discussed, given the Riksbank's financial losses due to the asset purchases.<sup>105</sup> The question of financial independence is not new, however. The parliament decided on extra transfers from the Riksbank to the government in 2000 and 2001, resulting in a lower level of equity and also zero holdings of government bonds. Since then, the levels and financing of the Riksbank's capital and foreign exchange reserves have been subject to reviews initiated by the government in 2007 and 2011, i.e., already before the later review of the Riksbank Act.

#### 4.6 Policy coordination

During the Bretton Woods era, the commitment to a fixed exchange rate put direct restrictions on the room of manoeuvre for monetary policy, and indirectly also for fiscal policy since the possibilities to inflate away government debt were limited. Restrictions on the international mobility of capital, labour, goods and services still allowed considerable degrees of freedom for macroeconomic policy.

After the collapse of the Bretton Woods system Swedish policymakers' commitment to low inflation and low public debt was weakened. Public debt increased from around 20 per cent of GDP to around 80 per cent in twenty years. Inflation doubled and the value of the krona in terms of foreign currency halved.<sup>106</sup>

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<sup>103</sup> In the "Account of monetary policy 2020" (p. 17), the Riksbank emphasized that one particularly important lesson from the crises was that "it is difficult to distinguish between measures that maintain the stability of the financial system and measures that maintain general economic stability and price stability". The report also contained a separate article on the need for flexibility in the new Sveriges Riksbank Act. The Riksbank has argued that the GFC, the need for QE when inflation and interest rates become very low, and the pandemic has shown that flexibility in monetary policy is needed. The review of the Riksbank Act (SOU 2019:46) contains a brief summary in English. For external comments on the proposals, see ECB (2020) and IMF (2020).

<sup>104</sup> Acharya (2015) discusses the economic and political arguments. Legitimacy problems with a wide mandate, and possible solutions, have been presented at a Riksbank conference on "Rethinking the central bank's mandate" by Archer (2016).

<sup>105</sup> See Kjellberg and Åhl (2022) and Nordström and Vredin (2022).

<sup>106</sup> Because of higher inflation in Sweden than in other countries, the real exchange rate did not show the same trend as the nominal exchange rate. Different measures of real exchange rates give different pictures. See Figure 2 and Belfrage et al. (2023).

The pegged-but-adjustable regime was clearly characterized by fiscal dominance over monetary policy and a low degree of central bank independence. In this sense, fiscal and monetary policy was coordinated during this period.

The reforms during the 1990s resulted in a clear separation of monetary and fiscal policy. The objective of monetary policy should be low and stable inflation. The objective of fiscal policy should be to stabilize public debt at a low level. Neither monetary nor fiscal policy were assigned responsibility for stabilizing capacity utilization or employment. The policies should not be, and henceforth were not, coordinated. However, the separation rests on the notion of monetary dominance over fiscal policy in the sense that fiscal policy stabilizes public debt taking interest rates as given. This separation is also consistent with EU rules.

The implications of fiscal policy for monetary policy were much discussed in the Riksbank's analyses and communication during the first years of inflation targeting, but then hardly discussed at all during the subsequent twenty years, when the framework for fiscal policy was reformed and public debt decreased. As in other countries, the persistent low inflation has led to new discussions in recent years, about the need for coordination, or at least consistency, of monetary and fiscal policy.<sup>107</sup> The low public debt now gives more room for fiscal policy in Sweden than in most other countries, but the central bank's independence still puts strong restrictions on the possibilities for coordination. The recent review of the Reserve Bank of Australia (de Brouwer et al., 2023) recommends "increased joint work between the Treasury and the RBA on the relative roles of fiscal and monetary policy". Which forms of "joint work" that can be made consistent with different countries' rules for central bank independence remains an open, and important, question.

In principle, there are strong arguments also for coordination of monetary policy with macro- and microprudential policies.<sup>108</sup> If, for example, high household debt is viewed as a problem, debt can be lowered by monetary policy, fiscal policy, macro-prudential policy or a combination thereof. The implications for price and real stability, and possibly other aspects of financial stability, will be different depending on how various instruments are combined.<sup>109</sup> Policy coordination could result in better outcomes than if the instruments are determined separately, but again political arguments and central bank independence shrink the set of feasible options. Swedish politicians deliberately decided, in 2013, to give the responsibility for macro-prudential policy to the Financial Supervisory Authority rather than to the Riksbank.

One result of the lack of coordination of macroeconomic policies in Sweden may have been that household debt has increased rapidly while public debt has declined, both to levels which are unusual in an international perspective. Whether this is a desirable policy mix, and possible alternatives, merit further discussions.

## 5. Summary and conclusions

Our chronology suggests that the flexibility of the exchange rate after the end of the Bretton Woods system has not insulated Sweden from the macroeconomic development in the rest of the world. This is not surprising, since the breakdown of the Bretton Woods system also was followed by financial liberalization and increased economic integration with the rest of the world (globalization). Increased dependence on the rest of the world contributed to new forms of crises.

Looking at the fifty years after Bretton Woods as a whole, it is not obvious that the higher degree of national monetary autonomy has been only beneficial. Sweden's economic development during the first twenty years was not good, neither in a historical nor international perspective. GDP growth was low, inflation was high, and public debt increased. The option of adjusting the fixed exchange rate

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<sup>107</sup> See Leeper (2018), Jansson (2021) and Thedeén (2023).

<sup>108</sup> See Bryant et al. (2012) for a discussion of the Swedish case.

<sup>109</sup> See Finocchiaro et al. (2017).

apparently weakened Swedish policy makers' commitment to low inflation and low public debt. Simply put: increased exchange rate flexibility did not lead to more macroeconomic stability, quite the contrary.

Many structural reforms during the 1990s, including new rules for fiscal and monetary policy, contributed to lower and more stable public debt and inflation. Sweden experienced a "great moderation", as many other countries, but the domestic structural reforms were clearly very important for this outcome. Nevertheless, the inflation targeting strategy has had its difficulties. It is not obvious how the targets for price and real stability should be set, how monetary policy should respond to supply shocks or to instability in the exchange rate and the financial system or how the links between monetary and fiscal policy should be taken into account. Liberalizations of the financial system have probably contributed to higher growth and welfare, but they have also led to higher risks of financial instability, as pointed out by Rajan (2005) already before the GFC. In principle, more coordination of monetary, fiscal and financial market policy could be beneficial. But in practice this may be hard to combine with a high degree of central bank independence.

The simple text book version of inflation targeting appears to have been implemented only during 1999 – 2007. During 1993 – 1998 credibility for the inflation target had to be established and a relatively strict version of inflation targeting was implemented, with little weight on output stabilization (at least in the rhetoric). Since the GFC 2008 – 2009 and onwards, the Riksbank has had to balance the risk of too low inflation against the risks associated with financial imbalances (increasing house prices and private debt). Forward guidance has been a natural part of monetary policy, especially since the Riksbank started to publish interest rate forecasts in 2007. But the (perceived) effective lower bound on the policy rate and financial frictions have led the Riksbank, like other central banks, to also implement other forms of "unconventional" monetary policy, in particular quantitative (and/or credit) easing.

A new Riksbank Act is in effect from 2023. The new Act gives the Riksbank an explicit dual mandate, for price and real stability, but also makes a clear distinction between monetary policy and financial stability policy, and introduces more restrictive rules for the Riksbank's asset purchases.

Monetary policy in Sweden has not deviated much from that in the rest of the world, in particular not from the euro area – see Figure 9, where Denmark represents the euro area. The differences in macroeconomic development compared to Denmark have not been large either. The developments of inflation, the GDP gap, public debt and national savings (the current account) are strongly correlated in the two countries. Differences when it comes to relative prices such as nominal exchange rates, real exchange rates and terms of trade have been larger. This shows that Sweden and Denmark, of course, have been hit by partly different shocks. The different strategies chosen for monetary policy by Sweden and Denmark since the early 1990s seem to have been equally successful when it comes to adjusting to the shocks. GDP growth rates in Sweden or Denmark have not deviated significantly from the euro area's experiences, once it is taken into account that there have also been differences within the euro area, see Figure 18.<sup>110</sup> Inflation in Sweden has been lower than in Denmark and in most euro area countries, see Figure 19.

At a conference organized by the Riksbank in January 2023, Kenneth Rogoff argued that "the introduction of central bank independence has been the most significant, positive development in macroeconomics since the Second World War".<sup>111</sup> The most significant and positive effect of central bank independence in Sweden seems to be the remarkable stability of medium-term inflation expectations, as depicted in Figure 10.

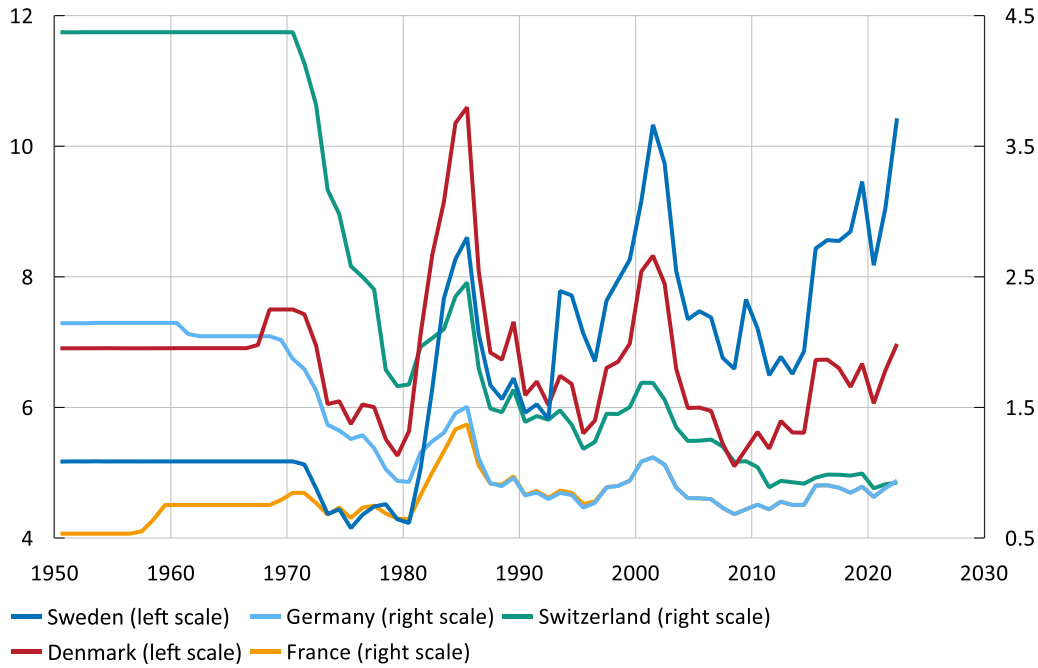
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<sup>110</sup> The countries with higher growth rates than Sweden and Denmark in Figure 18 are mainly the Baltic and East European countries.

<sup>111</sup> [International Symposium on Central Bank Independence: Panel 3 | Sveriges Riksbank.](#)

**Figure 1. Nominal exchange rates**

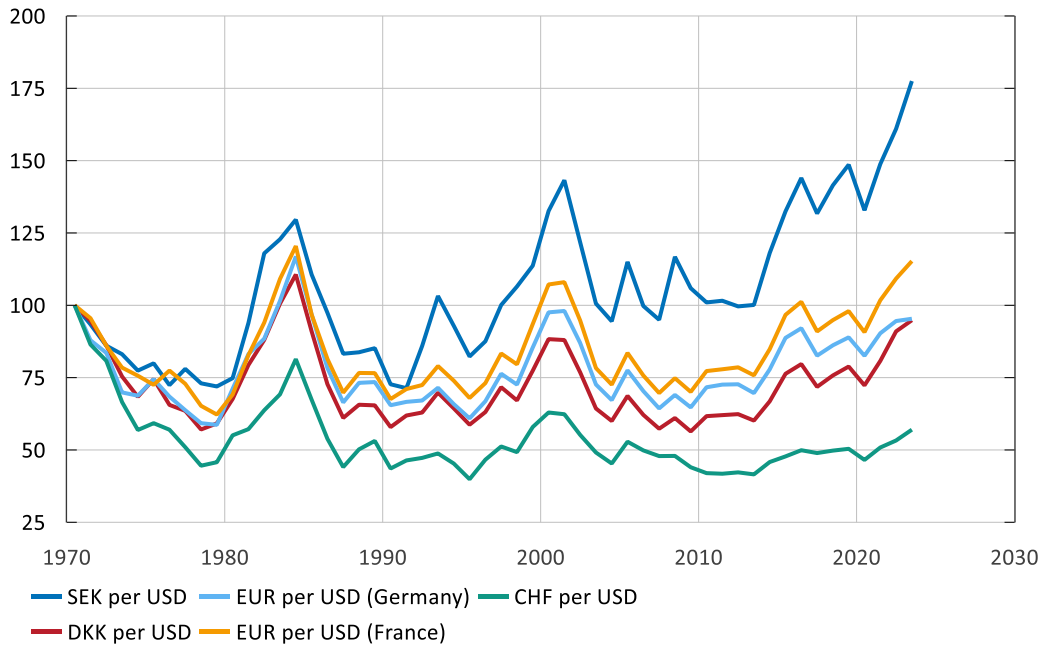
Versus USD



Source: Bank of International Settlements (BIS).

**Figure 2. Real exchange rates**

Index, 1970=100



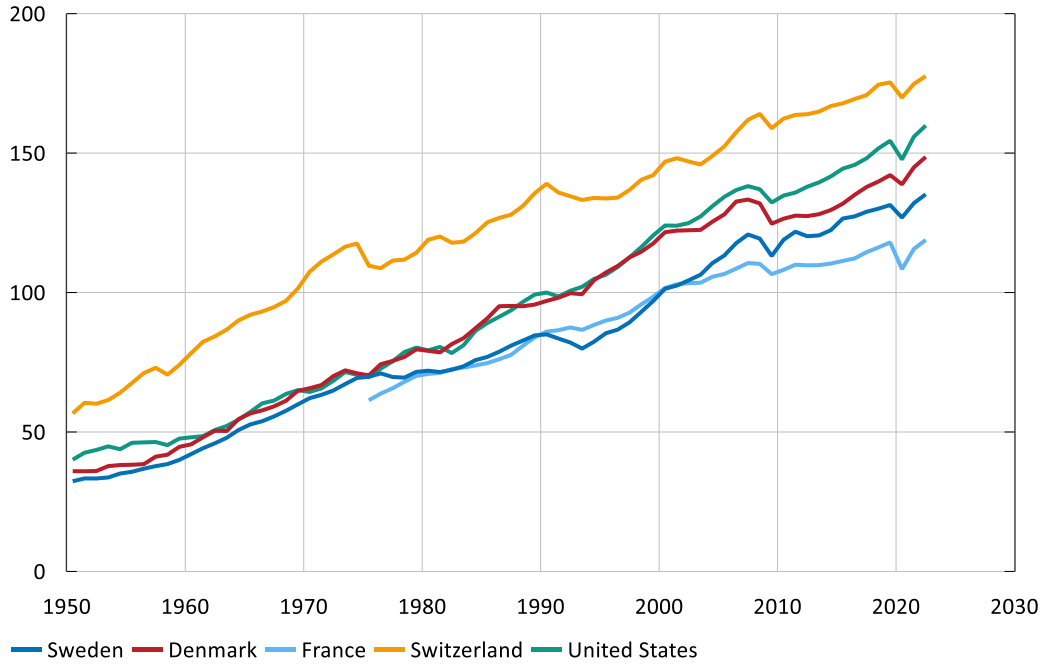
Note. The real exchange rates are calculated for each country from nominal exchange rates and the ratio of national to U.S. consumer price indexes.

Source: U.S. Department of Agriculture.



Figure 3. Real GDP

Index, USA 1990-01-01 = 100

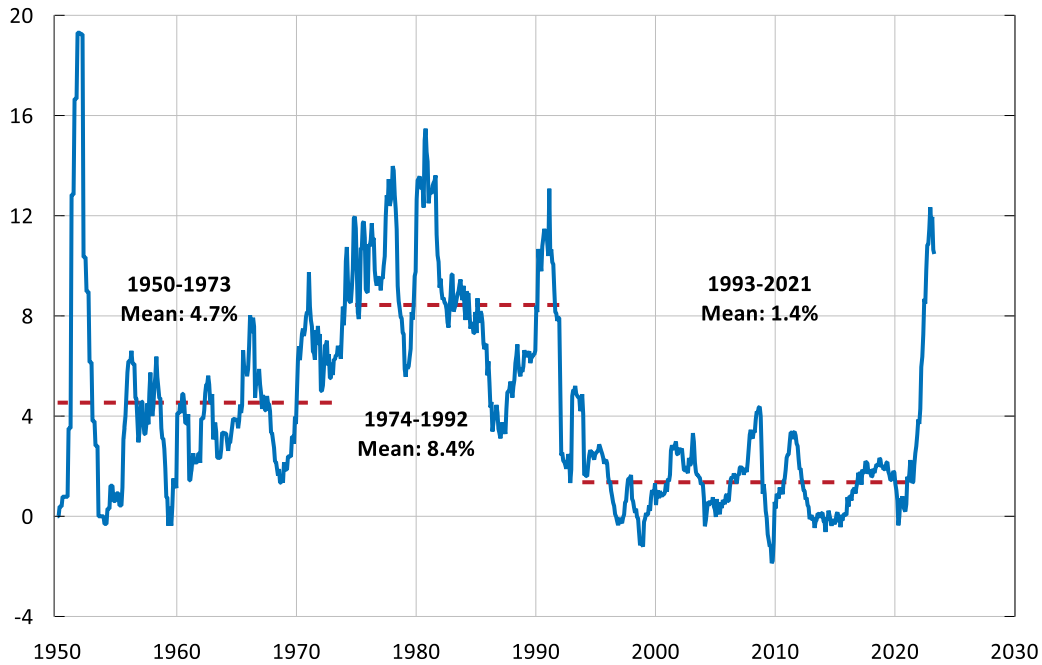


Note. GDP per capita based on purchasing power parity (PPP). Index set to percentage deviation from United States in 1990.

Source: Conference Board (TED).

Figure 4. Inflation in Sweden

Per cent

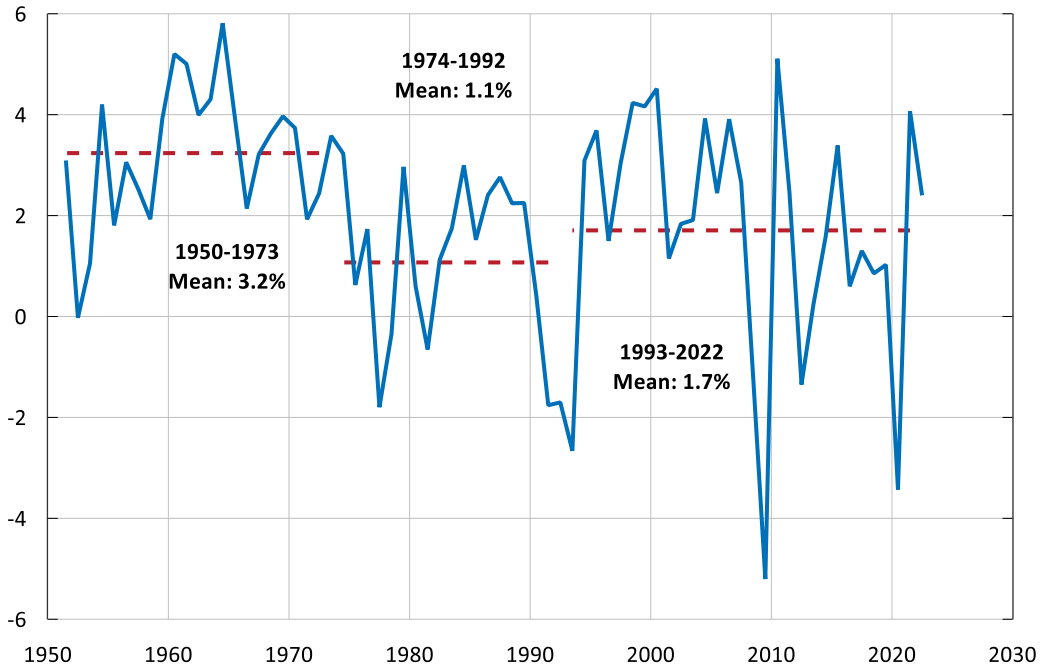


Note. CPI.

Source: BIS.

Figure 5. Real GDP-growth in Sweden

Per cent

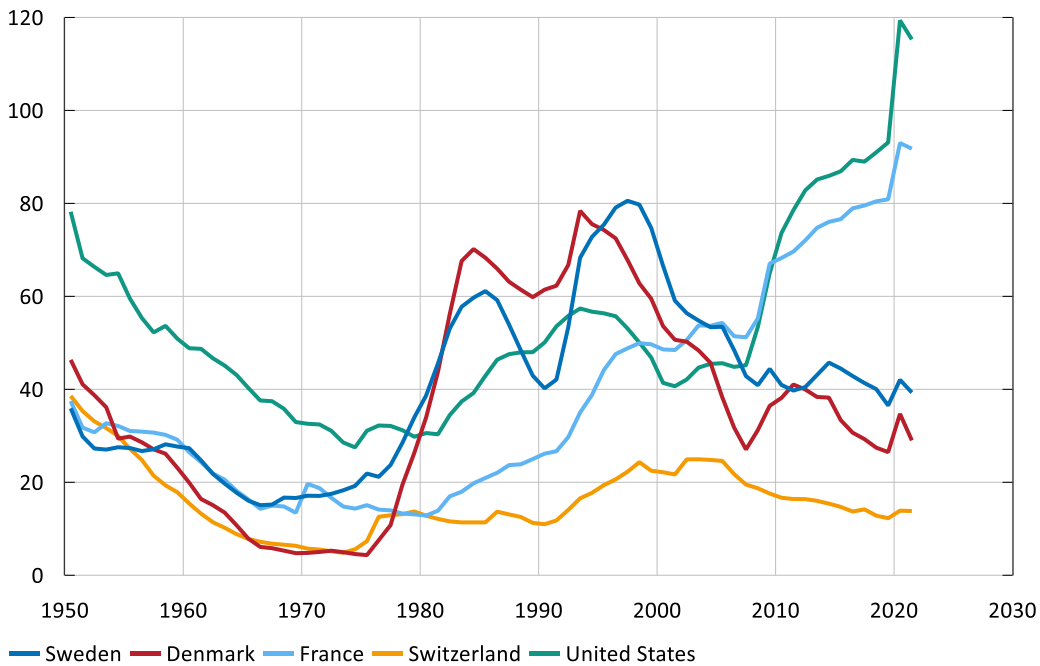


Note. Per capita based on purchasing power parity (PPP).

Source: Conference Board (TED).

Figure 6. Government debt

Per cent of GDP

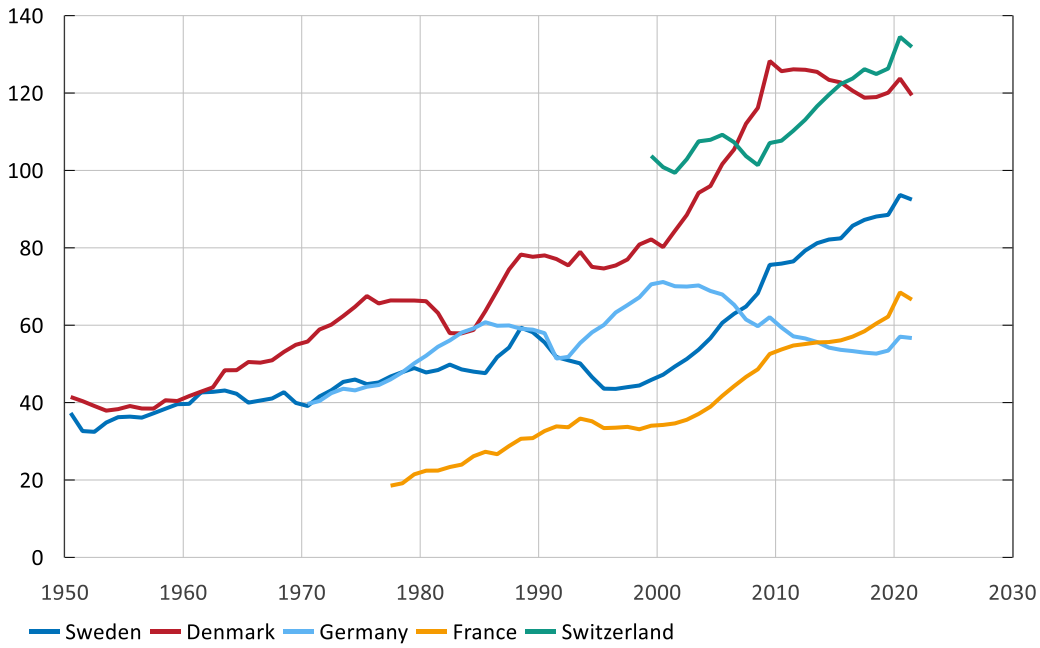


Note. Central Government Debt, Percent of GDP.

Sources: IMF.

**Figure 7. Household debt**

Per cent of GDP

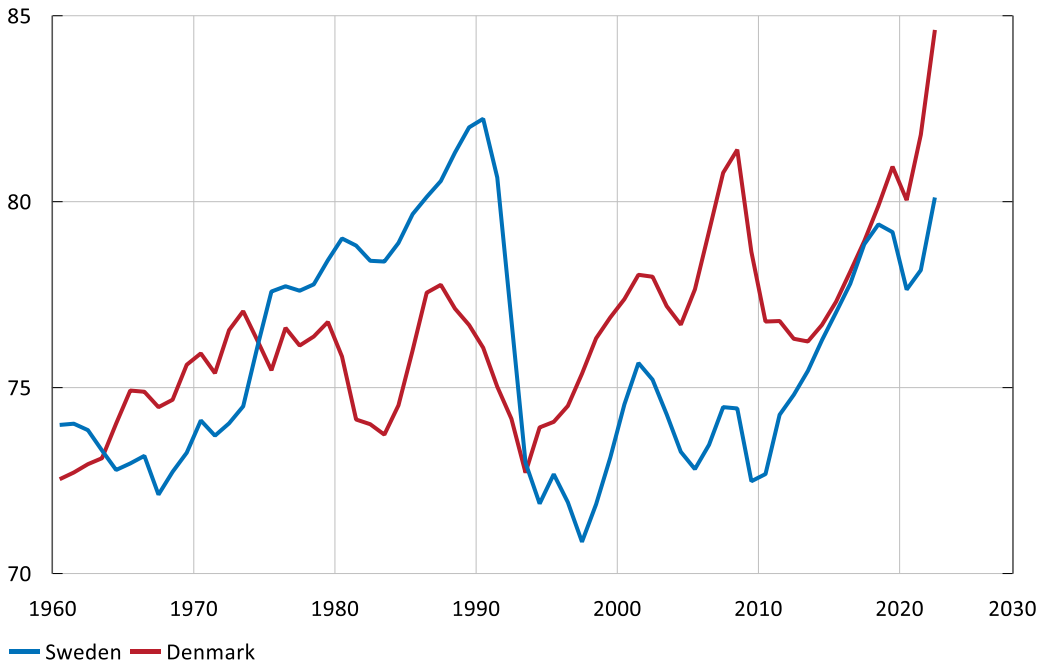


Note. Total domestic non-bank credit extended by resident mortgage banks for Denmark. Total stock of household debt, including all debt instruments, as a share of GDP.

Sources: Abildgren (2012), IMF, Statistics Denmark and Statistics Sweden.

**Figure 8. Employment rate**

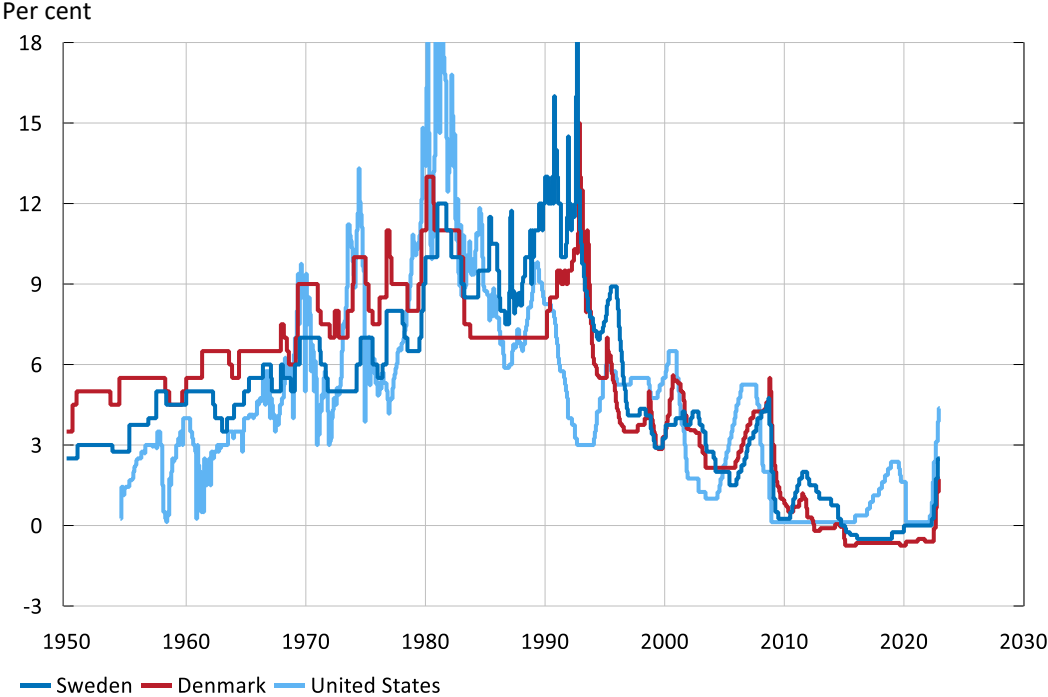
Per cent of population



Note. Domestic employment divided by population aged 15-64 years.

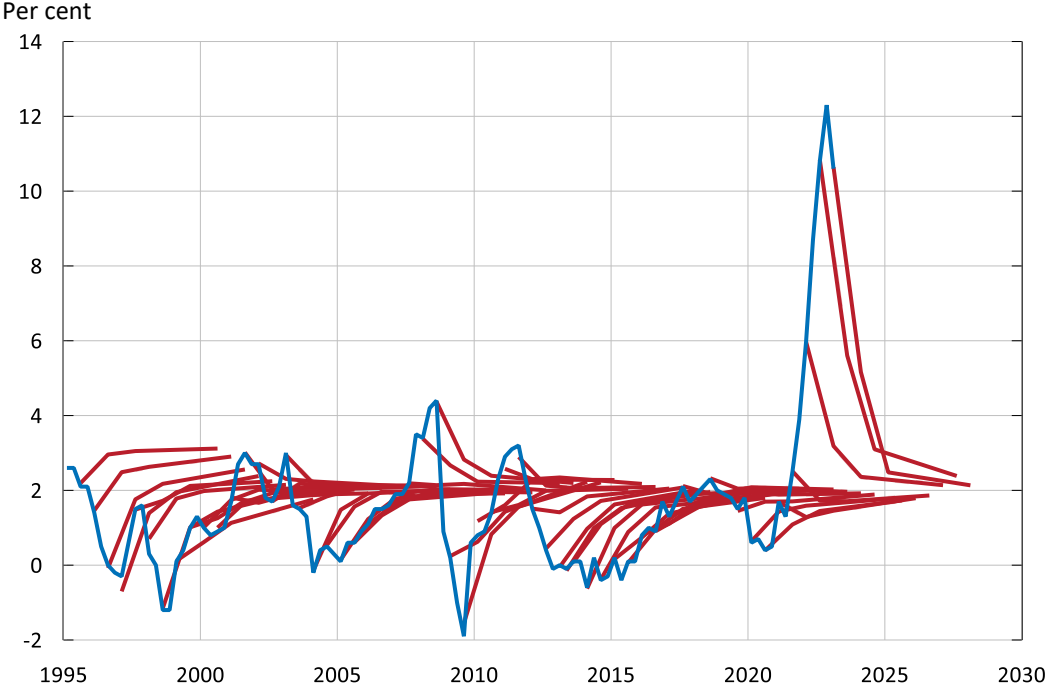
Sources: DG ECFIN AMECO

Figure 9. Policy rates



Note. Policy rates, the type of rate differs over time within each country.  
Sources: BIS and national central banks.

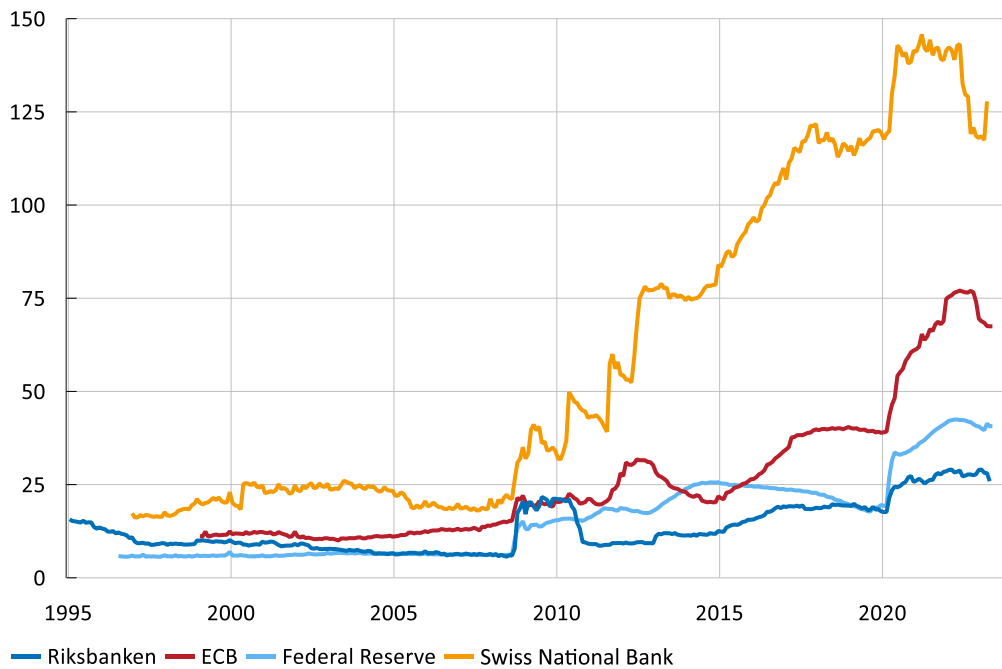
Figure 10. Inflation expectations in Sweden



Note. Survey Expectations of CPI in 1 year, 2 year and 5 years' time.  
Sources: Kantar Prospera and Statistics Sweden.

Figure 11. Central banks' balance sheets

Per cent of GDP

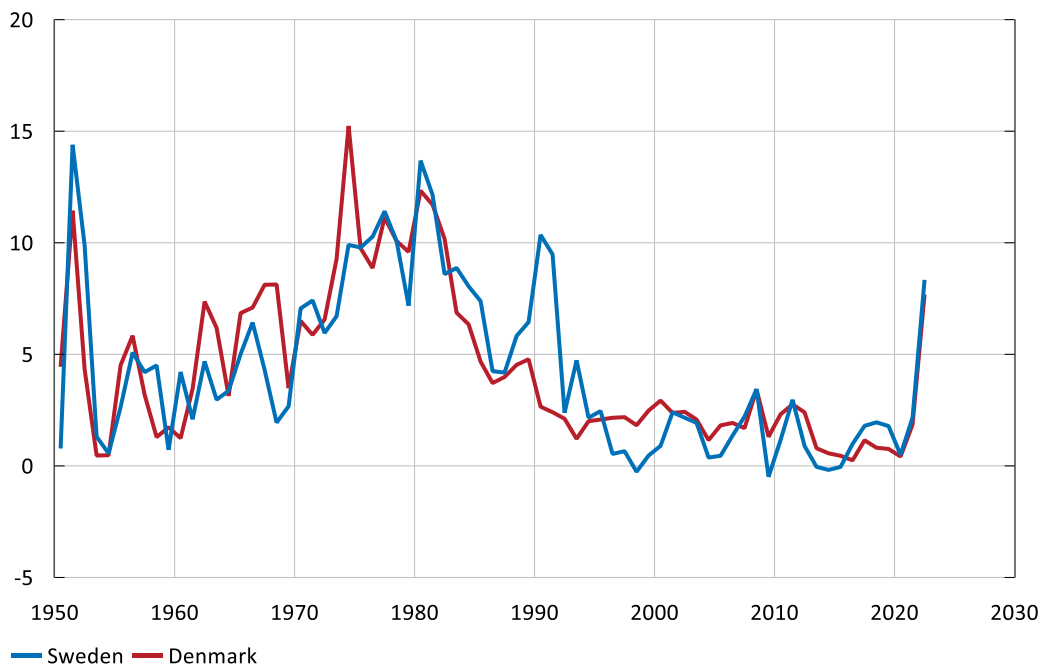


Note. Klicka här för att ange anmärkning.

Sources: National central banks.

Figure 12. Inflation

Per cent

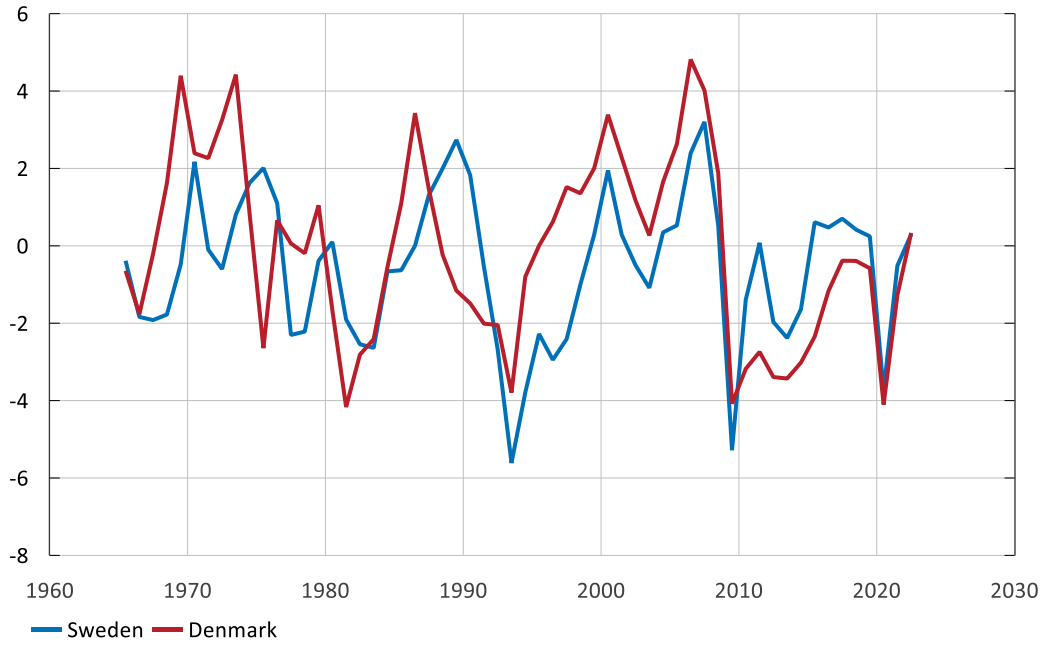


Note. Consumer price index.

Sources: Bank of International Settlements (BIS).

Figure 13. GDP-gap

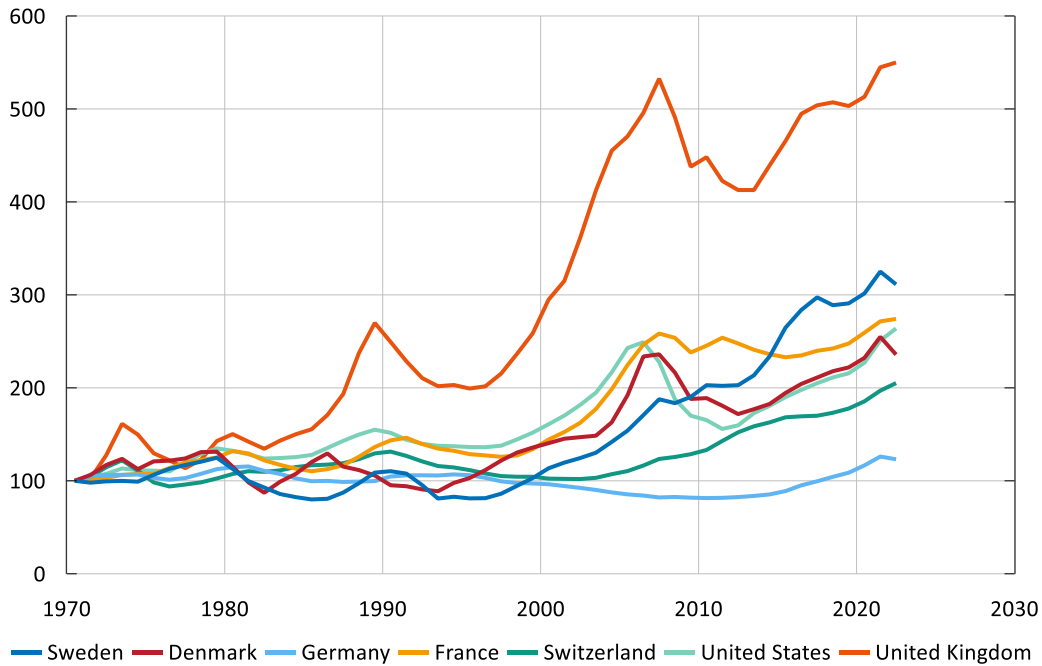
Gap between actual and potential GDP



Source: DC ECFIN AMECO.

Figure 14. Housing prices

Index, real 1970=100.

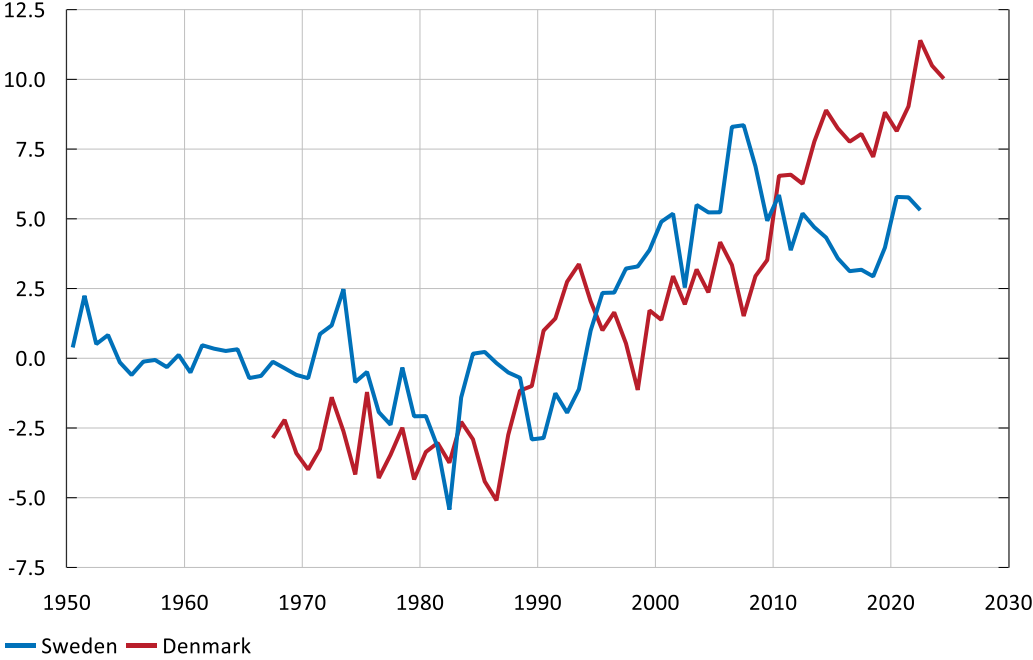


Note. CPI-deflated.

Source: Bank of International Settlements (BIS).

Figure 15. Current accounts

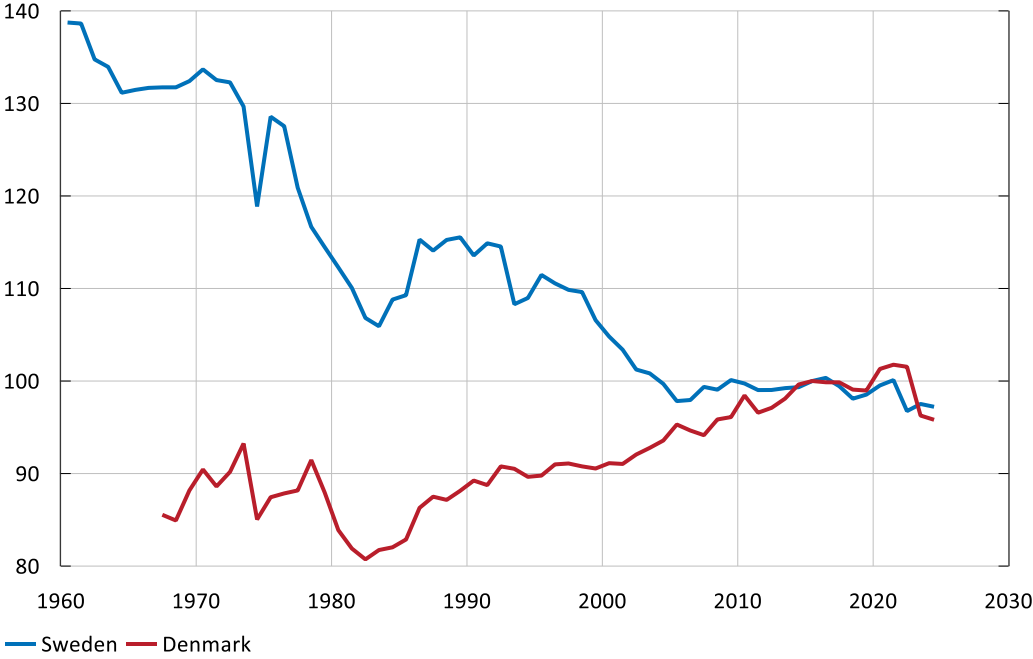
Percent of GDP



Sources: CEPII, Macrobond and Statistics Sweden.

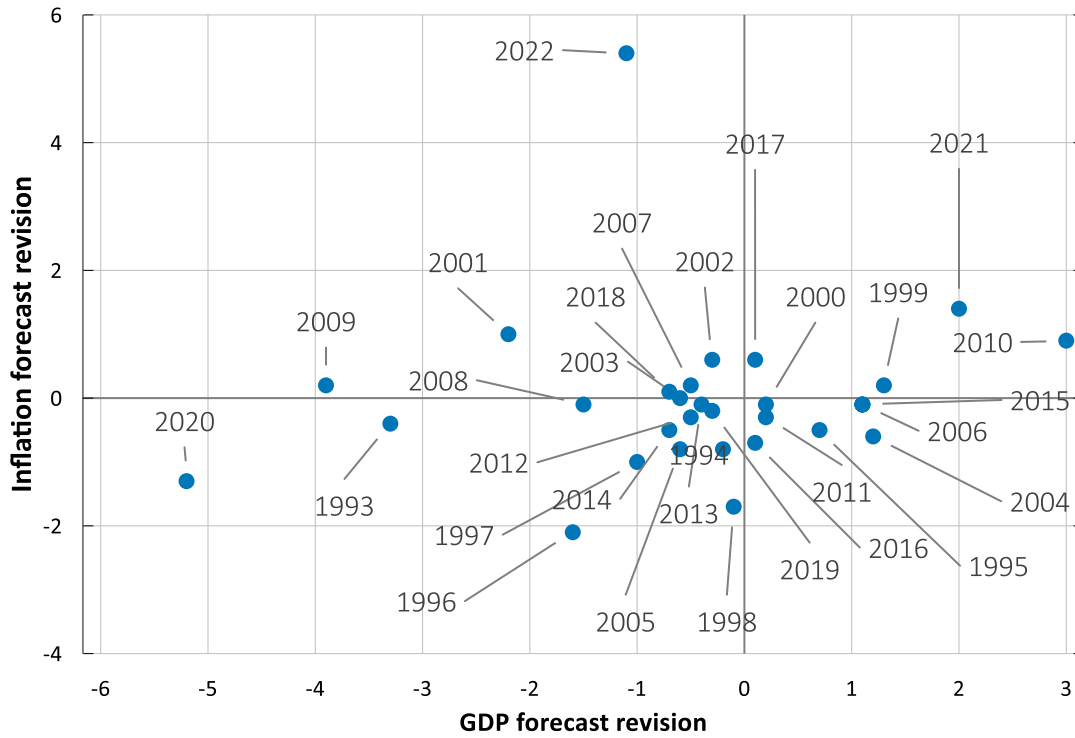
Figure 16. Terms of Trade

Index, 2015-01-01=100



Sources: DG ECFIN AMECO.

Figure 17. The Riksbank's forecast revisions, 1993 - 2022

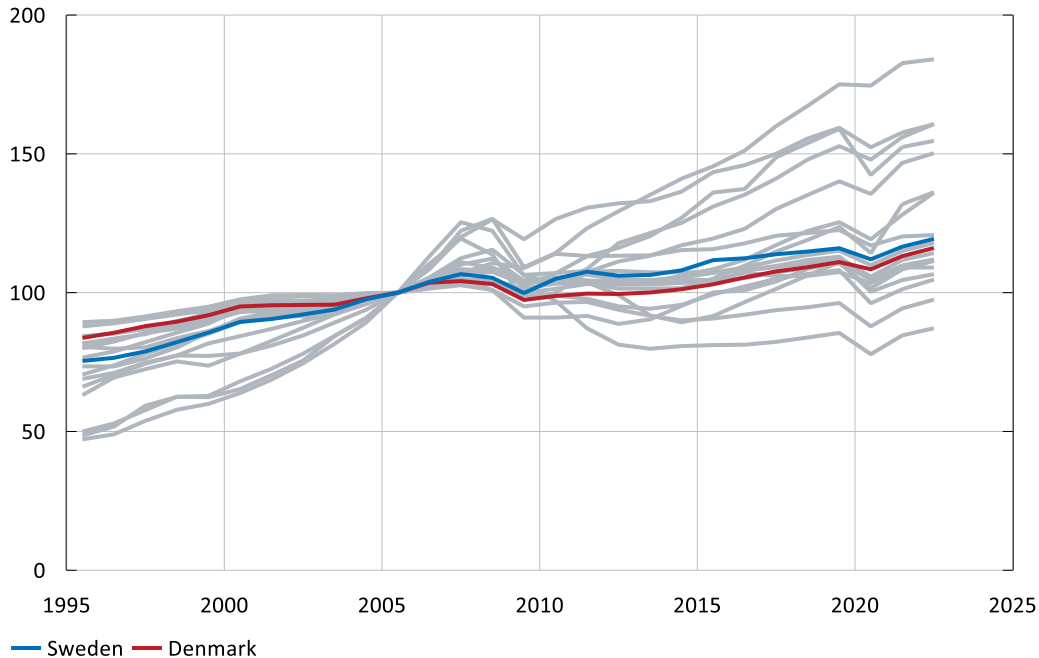


Note. Klicka här för att ange anmärkning.

Source: The Riksbank.

Figure 18. Real GDP in Sweden, Denmark and the euro area

Index, 2005 = 100



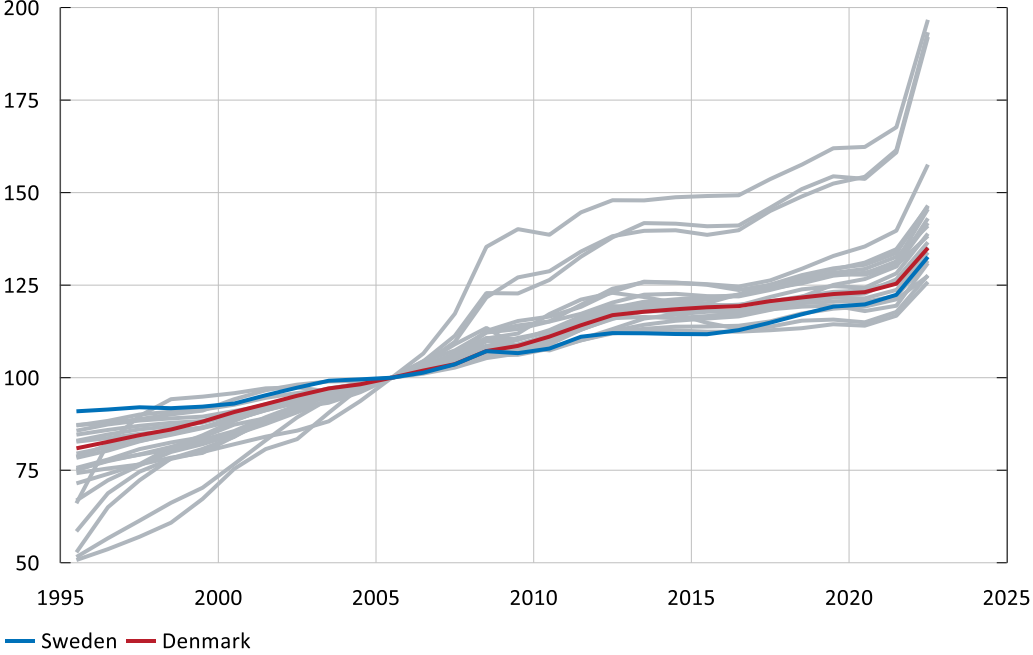
Note. GDP per capita based on purchasing power parity (PPP).

Source: Conference Board (TED).



Figure 19. Consumer price level in Sweden, Denmark and the euro area

Index, 2005 = 100



Note.

Source: Bank for International Settlements (BIS).

Table 1. Inflation, CPI (per cent)

|                    |                  | Mean       | Standard deviation |
|--------------------|------------------|------------|--------------------|
| <b>Sweden</b>      | 1950–1973        | 4.5        | 3.2                |
|                    | 1974–1992        | 8.4        | 2.9                |
|                    | 1993–2021        | 1.4        | 1.2                |
|                    | <b>1993–2022</b> | <b>1.6</b> | <b>1.7</b>         |
| <b>Denmark</b>     | 1950–1973        | 5.0        | 2.9                |
|                    | 1974–1992        | 7.4        | 3.9                |
|                    | 1993–2021        | 1.7        | 0.8                |
|                    | <b>1993–2022</b> | <b>1.9</b> | <b>1.4</b>         |
| <b>Germany</b>     | 1950–1973        | 2.4        | 2.7                |
|                    | 1974–1992        | 3.6        | 2.0                |
|                    | 1993–2021        | 1.6        | 0.9                |
|                    | <b>1993–2022</b> | <b>1.8</b> | <b>1.4</b>         |
| <b>France</b>      | 1952–1973        | 4.6        | 3.6                |
|                    | 1974–1992        | 7.7        | 4.2                |
|                    | 1993–2021        | 1.4        | 0.7                |
|                    | <b>1993–2022</b> | <b>1.5</b> | <b>1.0</b>         |
| <b>Switzerland</b> | 1950–1973        | 2.8        | 2.4                |
|                    | 1974–1992        | 3.8        | 2.4                |
|                    | 1993–2021        | 0.6        | 0.9                |
|                    | <b>1993–2022</b> | <b>0.7</b> | <b>1.0</b>         |

Sources: Bank of International Settlements (BIS), Statistics Denmark and Statistics Sweden.

Table 2. Real GDP-growth per capita, PPP adjusted (Per cent)

|                      |           | Mean | Standard deviation |
|----------------------|-----------|------|--------------------|
| <b>Sweden</b>        | 1951–1973 | 3.24 | 1.38               |
|                      | 1974–1992 | 1.07 | 1.67               |
|                      | 1993–2022 | 1.71 | 2.47               |
| <b>Denmark</b>       | 1951–1973 | 3.10 | 2.50               |
|                      | 1974–1992 | 1.74 | 2.14               |
|                      | 1993–2022 | 1.36 | 2.04               |
| <b>Germany</b>       | 1951–1973 | 4.80 | 2.39               |
|                      | 1974–1989 | 1.98 | 1.50               |
|                      | 1993–2022 | 1.10 | 2.24               |
| <b>France</b>        | 1951–1973 | -    | -                  |
|                      | 1975–1992 | 2.11 | 1.26               |
|                      | 1993–2022 | 1.06 | 2.40               |
| <b>Switzerland</b>   | 1951–1973 | 3.21 | 2.28               |
|                      | 1974–1992 | 0.80 | 2.56               |
|                      | 1993–2022 | 0.94 | 1.62               |
| <b>United States</b> | 1951–1973 | 2.58 | 2.48               |
|                      | 1974–1992 | 1.84 | 2.44               |
|                      | 1993–2022 | 1.57 | 1.90               |

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