# Can fiscal austerity be expansionary in present Europe? The lessons from Sweden[♣]

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September 4, 2013

Abstract

In the mid-1990s, a Social Democratic government pursued an ambitious fiscal austerity policy in Sweden in the aftermath of a deep recession and public budget crisis. Economic advisors were guided by the idea that fiscal austerity would have neutral or expansionary effects on output and employment. In order to avoid large public deficits in the future the government also introduced radical fiscal rules. The main conclusion in this article is that the fiscal austerity measures in the mid-1990s delayed the Swedish economic recovery and that neither these measures nor the fiscal rules were responsible for the impressive Swedish macroeconomic performance in the following period. The positive economic development in Sweden was driven by export, profit and technology, reflecting an international upswing and the country's flexible exchange rates and industrial composition. Similar beneficial conditions for expansion are not present in the EMU countries suffering from a budget and debt crisis today.

Keywords: Fiscal austerity, Swedish stabilization policy, Swedish growth, fiscal rules

JEL classification: C32, E22, E43, E62

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[♣] The article is based on a speech at the Madariaga College of Europe Foundation, Brussels, November 23, 2012 (see the Madariaga Report with a similar title).

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## 1. Introduction

The EU commission, IMF, ECB and Germany have hitherto recommended the EMU countries severely hit by a public debt crisis to expand by fiscal austerity. Advocates of the policy refer to sound economic theories and the prevalence of good examples. One influential argument for fiscal restraint is based on Swedish experiences. During the first half of the 1990s Sweden suffered a deep recession and financial crisis leading to mass unemployment and a large public budget deficit. In the middle of the decade a Social Democratic government pursued a very restrictive fiscal policy. During the second half of the 1990s the government also introduced strict fiscal policy rules. The conventional view, both in Sweden and abroad, is that the tight fiscal policy in the mid-1990s and the domestic fiscal rules constituted a success story. The country soon attained a public budget balance. And from the mid-1990s until the global financial crisis in the late 2000s Sweden displayed higher GDP growth than the EU and OECD countries on average, and also higher than the small open Western European countries on average. In 2008-2012, Sweden managed to escape a public budget and financial crisis similar to that of the early 1990s. Between 2008 and 2012, Sweden had a higher GDP growth than other EU countries, except for the new Eastern-European members in the 2000s.

The fiscal austerity measures in Sweden enjoyed overwhelming political support. Parties other than the Social Democrats (including the Left Party, the former Communist Party) were anxious to add to the Swedish chronicle that they had supported the restrictive fiscal policy of the mid-1990s. They emphasized, as did leading Swedish economists, that a budget consolidation policy was inevitable and furthermore based, in the Swedish case, on a preferable combination of expenditure cuts and tax increases. What more is, all parties in Parliament (except for the Left Party) endorsed the fiscal rules. The centre-right coalition government since 2006 and the largest opposition party, the Social Democrats, still have strong confidence in these rules.

This article maintains, however, that fiscal austerity in the mid-1990s actually delayed the Swedish recovery and that neither this policy nor the fiscal rules were major factors in Sweden's good growth performance by Sweden in the subsequent years. The country's economic development up until the global financial crisis was driven mainly by export, profit and technology reflecting an international recovery and favourable exchange-rate and industry-structural conditions. Moreover, as a result of the rapid recovery of the Baltic countries, Sweden was lucky enough to escape a bank crisis 2008-2009. Two of the four

leading banks in Sweden were heavily exposed to the Baltic countries. But the focus in this article is on the relationship between fiscal restraint and Sweden's economic development since the mid-1990s, thus not exclusively on the country's economic policy and performance during the global financial and debt crisis.

The article is primarily a case study of Sweden including some regression analysis. But it also uses a qualitative comparative approach comparing Sweden's fiscal policy and macroeconomic performance to that of other OECD countries, especially other small open Western European countries (Norway, Finland, Denmark, Austria, Belgium, the Netherlands and Switzerland). The conclusions are buttressed by findings from earlier inquiries. Before scrutinizing the short and long run real effects of Swedish fiscal restraint, the article describes the background to the Swedish austerity policy and fiscal rules in the 1990s, the scope of these fiscal measures and rules in an international perspective, and the underpinning economic theories.

**2. The introduction of a new economic-policy regime**

In the 1980s, an international boom, two devaluations of the Swedish crown (SEK) and an abandonment of the restrictions on bank lending in combination with a tax system favouring borrowing resulted in serious overheating and (relatively) high inflation in Sweden. Fueled by the development of new financial instruments and institutions an economic bubble appeared, especially in stocks and commercial real estate. The early 1990s saw a collapse of the stock, housing and commercial real-estate markets in Sweden. In consequence, there was a bank crisis and an exceptional decline in private consumption and investment. The depression was largely domestic and no other OECD country than Finland experienced a comparable crisis at that time. Swedish GDP fell in absolute terms three years in a row. The decline in Swedish GDP growth and employment between 1991-1993 was actually larger than that during the Great Depression of the 1930s (Edvinsson 2005, Table 9.7 and 9.12). Unemployment shot up from 1.5 per cent in 1990 to above 9 per cent in 1993-1994. Speculative attacks against the SEK in the early 1990s also led to the collapse of the fixed exchange-rate system in November 1992. Furthermore, a 3.4 per cent budget surplus for general government in 1990 turned to a 11.3 per cent deficit in 1993, a figure only comparable to Greece at that time. And the Swedish gross public debt increased from 47 per cent in 1990 to 84 per cent in 1994 (OECD Economic Outlook 2005 and 2007b, no 2, Table 27 and 32).

The growing public budget deficit in Sweden during the first half of the 1990s was the result of a combination of built-in stabilizers and expansionary fiscal policies, inter alia, through extraordinary bank subsidies.[1] A non-socialist coalition minority government in 1991-1994 had the ambition, but not the internal cohesion and time, to implement a radical programme for fiscal consolidation. The programme was mainly carried out by the Social Democratic minority government installed in October 1994. The restrictive fiscal policy of the mid-1990s, when the rate of unemployment was still high, was a clear break with the Swedish economic policy embraced in the early 1930s. At the initiative of leading Social Democrats and economists belonging to the so-called Stockholm School of Economics Keynesian ideas of active countercyclical economic policy were adopted already in the early 1930s in Sweden.

The restrictive fiscal policy in Sweden in the mid-1990s was made possible for several reasons. Firstly, the trauma of the economic crisis at the beginning of the decade had an equal impact on people of all ages, genders and in all sectors. This allowed a consensus to emerge on the damaging effects of inflation and the policy response was accepted even by the central trade-union organizations. Secondly, new economic thinking was emerging, stating that unemployment rates of 1.5 per cent were unsustainable and that a reduction in unemployment could only be made through product market deregulation and measures promoting flexibility in the labour market. Thirdly, in the 1980s and 1990s, economic experts governed by new economic thinking extended their influence over Swedish economic policy and the blue-collar trade union confederation, LO, had a correspondingly decreasing impact. However, it is difficult to infer whether the fiscal austerity measures in the mid-1990s were initiated by the leading politicians or by professional economists within the Ministry of Finance (Erixon 2011, pp. 294-299). Fourthly, EU integration played a role in making fiscal austerity possible due to the Maastricht convergence rules prohibiting a large public budget deficit and debt (the 3 per cent GDP deficit rule and the 60 per cent GDP debt rule). After a (close) referendum in 1994 Sweden entered the EU the following year.

The four above-mentioned factors were also decisive for the introduction of fiscal and monetary targets and other changes in the economic-policy regime in Sweden in the 1990s

[1] The OECD measure of government cyclically-adjusted balances gives a larger prominence to lax fiscal policies than to built-in-stabilizers when the growing Swedish budget deficit 1991-1993 is to be explained (see Economic Outlook 2007, no 2, Table 27 and 28). But the OECD estimates probably exaggerate the importance of discretionary fiscal measures for the Swedish public-budget crisis and probably also for the following public budget consolidation.

and 2000s. The switch to flexible exchange rates was followed by a decision by the Central Bank (the *Riksbank*) to adopt an inflation target of 2 per cent (with a permitted departure of 1 percentage point in both directions until 2011) used as a guideline for monetary policy from 1995. The growing independence of the *Riksbank* with price stability as the ultimate goal was finally settled in 1998. Furthermore, Social Democratic governments made some fiscal reforms during the second half of the 1990s to prevent the reemergence of large public deficits. The use of a top-down budget process for central government from 1996 restricted the possibilities for Parliament to increase expenditure by a breakdown of the budget items. Moreover, a Social Democratic government proposed a ceiling on central government expenditure over a three-year period, a rule enforced from 1997. The same year the Social Democrats introduced a fiscal target for general government demanding a surplus of 2 per cent of GDP for each business cycle. The reduction in target from 2 to 1 per cent in 2006 did not reflect an easing of fiscal rules. Rather, it was a consequence of EU regulation requiring that some parts of the pension system should be included in the private sector. Finally, the Social Democrats in 1997 decided to restrict the extent to which local and county governments could pass budgets without a deficit. The new law, introduced in 2000, stated that these governments must eliminate budget deficits within two years.

**3. Swedish fiscal restraint in a comparative perspective**

The large Swedish public-budget deficit in 1993 vanished rapidly in the following years to be completely eliminated in 1998. And from 1995 to 2000, the gross public debt as a ratio of (nominal) GDP decreased by 17 percentage points and the net public debt in relation to GDP by 20 percentage points. In year 2001, Sweden's net public debt even became negative (OECD Economic Outlook 2012, no 2, Table 32 and 33). Swedish fiscal policy in the mid-1990s was very restrictive in a historical perspective.[2] Built-in stabilizers made a substantial contribution to the reduction and eventual disappearance of the public budget deficit. But according to OECD estimates fiscal austerity was the major factor in the Swedish budget consolidation 1994-1998. Besides, the consolidation programme in 1995-1998 was front loaded, thus the Social Democrats had no intention of postponing the deflationary measures until the end of their term of office 1994-1998 (Henriksson 2012, pp. 2 and 6). In fact an ambitious fiscal

[2] Estimates of the contribution of fiscal policy to the public budget balance in Sweden are only available for the postwar period, see Matthiessen (1971) and Braconier and Holden (1999).

austerity programme had already been launched by the non-socialist government at the beginning of 1994.[3]

Swedish fiscal restraint in the mid-1990s was also exceptional from an international perspective. The OECD secretariat regularly presents data on the cyclically-adjusted public budget balance in member countries. Table 1 shows the OECD countries and periods with the strongest fiscal restraint from 1970 (the first year of the OECD time series) up until the current global financial crisis. From the perspective of stabilization policy it is less meaningful to define periods longer than five years. The table also excludes periods shorter than three years.

Table 1 in here

Disregarding the fiscal policy in Germany in 1996-1998 and the Netherlands in 1996-1999, Swedish fiscal policy in 1995-1998 is the most obvious example of fiscal austerity in the OECD area in the three- and four-year perspective. The Social Democrat fiscal policy in Sweden in the mid-1990s seems to have been more restrictive than the Thatcher policy in the United Kingdom in the period 1979-1982. And countries with a similar or stronger fiscal restraint than Sweden pursued this policy in a steady recovery with falling unemployment rates (in the late 1990s). Many difficulties are involved in the measuring and comparison of discrete fiscal policy (see Barnes, Davidsson and Rawdanowics 2012, p. 16). But new methodologies and estimates by the OECD secretariat in the mid-2000s did not alter the earlier estimates of the cyclically-adjusted budget balances since 1980 in any significant way (Girouard and André 2005). We can, rather confidently, draw the conclusion that the public budget consolidation policy in Sweden in the 1990s was radical from an international perspective.

The multidimensional character of the fiscal rules, but also the variation in obedience, makes it difficult to compare the actual strictness of fiscal rules in different OECD countries (see OECD 2002, pp. 132-134; CESifo 2012; Barnes, Davidsson and Rawdanowics 2012). The rigour of the fiscal rules can be assessed in terms of whether they are explicit numerical targets, cover public expenditure or public budget balances or both, define the public debt or public deficit or both, make exceptions for some budget items, are only binding in the short, medium or long term, are recommendations rather than compulsory (possibly including sanctions), are national or supranational or both, and are fixed or time specific. Furthermore,

[3] According to the OECD estimates of cyclically-adjusted budget balances 1996 was the very year of fiscal austerity in Sweden.

the fiscal rules may cover general government or central government only. Finally, the rules might have been in force for a long time or adapted rather recently.

The ambition of this article is not to construct a general fiscal-rule index enabling a definition of the Swedish degree of rigor. In some respects the Swedish fiscal rules are less demanding than those in other OECD countries. They are not sanction-based, like the rules in the US, Canada and the Stability and Growth Pact (SGP) between the EMU countries. The Swedish fiscal rules are not both domestic and international as in the case with most EMU countries. Furthermore the Swedish restrictions on the public budget balance are not defined in the short run or in terms of the public debt as in the SGP. And as in most OECD countries, the expenditure target in Sweden covers central government only.

But an overall evaluation of the fiscal rules indicates that the Swedish fiscal rules are relatively strict. The claims on a public budget surplus in the medium term are binding in the Swedish fiscal system, not only recommendations as in the SGP until the Fiscal Compact in March 2012. And Sweden has both a budget and an expenditure target in contrast to, for example, Norway, Australia, the US and Canada today. And the EMU countries without any domestic rules had no expenditure target until the Fiscal Compact (Greece, Ireland, Poland and Portugal). Moreover, the budget target is explicitly numerical in Sweden, which is generally not the case in Denmark, Australia, Austria and Canada. And the restriction on the public budget balance is fixed, not time-specific or conditional as in Norway, Denmark, Finland, Switzerland, the US and Japan and in fact also in the SGP (exceptions for severe economic downturns). By including, for example, the social insurance system the expenditure target for central government covers virtually all expenditure in Sweden while the Finnish expenditure target, inter alia, excludes payment from this system. Besides, in contrast to Germany and the UK following the so-called Golden Rule, the Swedish public budget target does not exclude borrowing to invest. Furthermore, the fiscal rules in Sweden were adopted earlier than in the bulk of OECD countries. The strictness and early application of the fiscal rules in Sweden is one major explanation for why the SGP (1997), institutionalizing the fiscal guidelines of the Maastricht Treaty (1992), had a weak impact on Swedish economic policy even before the rejection of EMU membership in a referendum in 2003 (see Ministry of Finance 1999).

Radical fiscal rules in Sweden do not necessarily imply that fiscal policy has been tighter in Sweden than in other EU and OECD countries. Swedish fiscal policy was predominantly restrictive, although countercyclical (in line with the medium-term budget target), from 1998

to 2007, thus in a period when most rules were in place. But in 1998-2007 fiscal policy was, on average, more restrictive in, for example, Denmark, Finland and Switzerland (OECD 2012, no. 2, Table 28). Moreover, the improvement in the budget balance (or the reductions in the real interest rate and increase in economic growth) was not the most important explanation for the dramatic decline in Swedish public debt. Primary surpluses (determined also by built-in stabilizers) explained only 36 per cent (30 per cent) of the decline in net public debt 1997-2007 (1997-2011). The reevaluation of debts and assets was by far the most important factor behind the decline in Swedish public debt (Flodén 2012). The contribution of the primary surpluses to the reduction in net public debt was actually larger in absolute terms in Denmark, Belgium, Canada and Italy. Thus, the conclusion in the empirical literature that the new fiscal-policy arrangements in Sweden were exceptionally successful in reducing public deficits and debts (see Miyazaki 2011) must be qualified.

**4. The theory of expansion through fiscal restraint**

The survey of the economic literature focuses on the argument at the time of the budget consolidation policy in Sweden, that restrictive fiscal austerity has neutral or even expansionary effects on GDP and employment. This section also highlights the arguments by advisors to the Swedish Minister of Finance in the mid-1990s that the restrictive fiscal policy at that time had neutral or expansionary effects. The advisors formulated these arguments during the years of budget consolidation or ex post. The section will also address the argument in the economic literature that fiscal rules have positive macroeconomic effects.

The Ricardian equivalence presupposes that the negative impact of fiscal restraint on output and employment will be offset by a rise in the private saving propensity. Economic experts in the Ministry of Finance referred to the Ricardian equivalence when maintaining ex post that fiscal austerity in the mid-1990s had contributed to macroeconomic stability in Sweden. They stressed that higher household savings through fiscal austerity had reduced the public budget deficit caused by built-in stabilizers (Ministry of Finance 2000, p. 23). Francesco Giavazzi and Marco Pagano had claimed already in the early 1990s, by reference to Denmark and Ireland, that fiscal austerity might even be expansionary. Cuts in public expenditure today result in household expectations that taxes will be reduced in the future. The pertinent stimuli of private consumption (through the positive wealth effects) can be decisive for the current macroeconomic activity level (Giavazzi and Pagano 1990). In another contemporary theory of

expansion through fiscal austerity, private consumption and investment can be enhanced by reductions in the interest rate. Rational agents anticipate that fiscal austerity will reduce the long-term (real) interest rate. The related increase in private consumption and investment may be decisive for aggregate demand, thus, fiscal restraint may have a positive effect on short-run GDP and employment (Blanchard 1991). This theory became a crucial part of the new consensus in macroeconomics in the 1990s.

When arguing in the middle of the 1990s that fiscal restraint is expansionary, Swedish economic experts in the Ministry of Finance emphasized the positive macroeconomic effects of falling long-term interest rates (Ministry of Finance 1995 and 2000, pp. 23-24; Swedish Government 1996, ch. 1). Specifically, they blamed the increase in the public deficit for having caused the growing interest-rate gap between Sweden and Germany in 1994-1995 (see next section). An economic advisor to the Minister of Finance in the mid-1990s has recently suggested, primarily by reference to Dixit and Lambertini (2000) and (2003), that fiscal contraction in Sweden in the mid-1990s stimulated the Swedish economy by eliciting an easier monetary policy. This argument for a relation between fiscal and monetary policy was an ex post rationale for the front loading feature of the restrictive fiscal policy in Sweden in the mid-1990s – in order to create creditability, extensive austerity programmes were already launched at the beginning of the consolidation period (Henriksson 2012). According to the underpinning economic theory, a commitment to fiscal restraint is a signal to the Central Bank that it can pursue a more expansionary monetary policy. Lower interest rates will, inter alia, weaken the currency and thus have a positive effect on net export. Paradoxically the Swedish Ministry of Finance had had hopes at the beginning of the budget consolidation period that the SEK would be *strengthened* by restrictive fiscal policy (see Henriksson 2012, p. 2). The Ministry probably assumed the policy would reduce expected inflation and therefore expectations of a depreciation of the SEK leading to a decline in long-term interest rates (see the interest parity condition). Thus, fiscal contractionism was supposed to have a negative impact on the interest rates in Sweden irrespective of the effects on expected and actual (domestic) monetary policy.[4]

[4] When arguing for restrictive fiscal measures in the mid-1990s, Swedish economic experts in the Ministry of Finance only occasionally focused on the public debt rather than on the public deficit. The weak stress on the arguments against a large public debt per se was largely explained by the low risk of government insolvency and default in the Swedish case.

An obvious weakness of an economic-policy strategy based on the idea of expansion through fiscal austerity is that the direct deflationary effect of tax increases and reductions in public expenditure might be decisive for GDP and employment in the short run, and further that the decrease in GDP and increase in unemployment might actually reduce confidence among households and firms. Furthermore, a reduction in the nominal interest rate is not necessarily connected to a reduction in the real rates. When arguing, in the mid-1990s, for that fiscal austerity would stimulate private consumption and investment, economic advisors to the Swedish Minister of Finance focused on the *nominal* interest rates. Economists forming the new macroeconomic consensus (the new neoclassical synthesis) admitted that the effects of fiscal restraint not only on GDP and employment but also on the real interest rate are theoretically ambiguous (Blanchard 1991, pp. 375-377). There was obvious inconsistency between the arguments by the defenders of Swedish fiscal austerity in the mid-1990s that the policy would make a large contribution to the reduction of inflation expectations and simultaneously be expansionary. The more efficient the fiscal austerity policy was in reducing expected inflation, the higher was the risk that this policy would increase the real interest rates.[5]

The main arguments in the economic literature for fiscal rules is that they will prevent governments from running public budget deficits and, by limiting the space for discretionary fiscal policy, increase macroeconomic stability. A more restrictive fiscal policy stimulates economic growth through the negative relationship between real interest rates and private investment. But fiscal rules may also enhance investment if they result in lesser output and inflation volatility. Economic advisors in the Ministry of Finance actually referred to the relationship between macroeconomic stability and investment when defending the fiscal contraction measures in Sweden in the mid-1990s (Ministry of Finance 2000, p. 23). Several studies verify that fiscal rules have been successful in reducing public deficits and debts (Badinger 2009; Dahan and Strawczynski 2010, pp. 9-10; Auerbach 2012, pp. 2-5). There are fewer studies of the effects of fiscal rules on economic fluctuations and growth. It seems that the rules have increased macroeconomic stability in most OECD countries (Badinger 2009). The

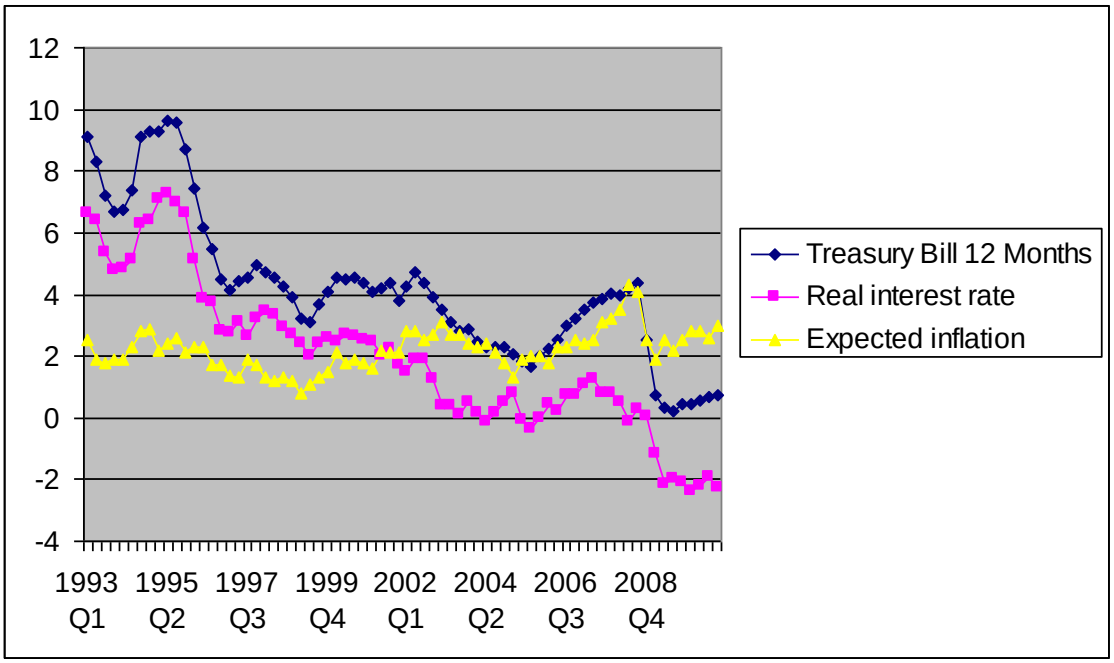
[5] Few academic economists challenged the new orientation of Swedish economic policy or the timing of the fiscal austerity measures in the mid-1990s (Erixon and Skult (1996) was an exception). An economic commission appointed by the centre-right government and headed by Assar Lindbeck objected in 1993 to a frontloading consolidation strategy, fearing a deepening of the economic crisis. The commission recommended a postponement of necessary cuts in public transfers until the end of the fiscal consolidation period 1994-1998 (SOU 1993:16, pp. 188-189).

results from studies of the direct relationship between fiscal rules and economic growth (based on data before the global financial crisis) are mixed. Some studies emphasize that higher public investments are growth-enhancing compared to higher public transfers (Castro 2007).

**5. The real effects of fiscal austerity in the short run**

At first sight, Swedish fiscal restraint in 1994-1998 seems to have been neutral or expansionary. In line with the Ricardian equivalence there was a sharp decrease in household savings rates in Sweden.[6] And long-term nominal and also real interest rates fell substantially during the second half of the 1990s – see Figure 1. Real interest rates shrank in this period, as the reduction in expected inflation did not match the reduction in nominal interest rates.

Figure 1 Nominal yield on Swedish treasury bills, expected inflation one year ahead by Swedish households and real Swedish interest rates (the nominal interest rate less expected inflation), 1993-2010, quarterly data

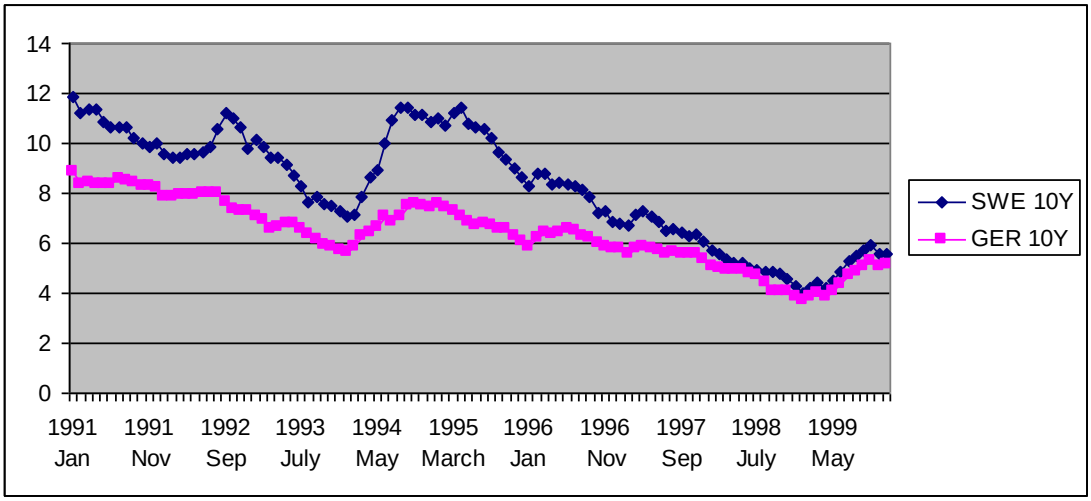



Source: The *Riksbank* (Treasure Bills 12 Months) and The National Institute of Economic Research (Consumer confidence indicators, expected inflation one year ahead)

[6] In fact no other OECD country except Italy had an equally strong decrease in net household savings rates as Sweden in 1995-1998 (OECD Economic Outlook 2010, no 2, Annex Table 23).

Moreover, after having widened in 1994-1995, the gap between long-term interest rates in Sweden and Germany decreased in 1995-1996 (see the comparison of 10 year bonds in Figure 2). In year 2000 the German-Swedish divergence in bond yields had actually disappeared.

Figure 2: Nominal yields on 10 year bonds, January 1991 – December 1999, Sweden and Germany, monthly data

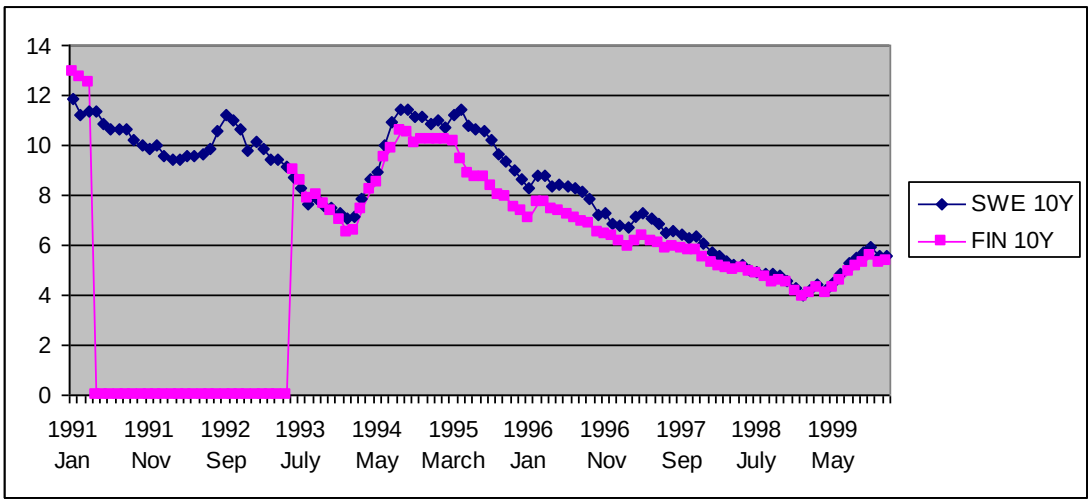



Source: The *Riksbank*.

The dramatic reduction in Swedish household saving 1994-1998 seems to be a strong case for the Ricardian equivalence. But it is extremely difficult to separate the effects of the public budget consolidation and the business-cycle upswing (by other factors). Furthermore, the development towards lower interest rates and inflation expectations in Sweden had begun already during the deep recession in the early 1990s. In fact, Swedish interest rates started to converge with the German rates immediately after the exchange-rate turmoil in Autumn 1992, that is, in a period of increasing public deficits. The growing long-term interest gap between Sweden and Germany in 1994-1995 arose through expectations of an increase in the *Riksbank*'s prime rate, thus it was not directly related to Sweden's public budget deficit. And these expectations were primarily based on the depreciation of the SEK which had led to higher import prices and also to unstable labour markets with overly high nominal wage increases, which is to be expected after a strong depreciation. In the first year with flexible exchange rates (1993), the SEK was depreciated by 25 per cent against the currencies of competing countries, a weakening of the SEK similar to that after the Swedish devaluations in

the early 1980s. This explanation for the larger differentials in interest rates in 1994-1995 between Sweden and Germany is corroborated by the fact that Finland had a similar development in interest rates as Sweden (see Figure 3). Finland had followed the same pattern of financial deregulation and overheating in the 1980s and financial crisis in the early 1990s as Sweden. Moreover, both countries switched to flexible exchange rates in Autumn 1992 (Finland two months earlier than Sweden) and experienced a similar dramatic fall in the value of the currency the following year. But Finnish governments had already undertaken fiscal austerity measures in the early 1990s, thus not as Sweden in the period when the long-term interest gap to Germany started to grow in both countries.[7]

Figure 3: Nominal yields on 10 year bonds, January 1991 – December 1999, Sweden and Finland, monthly data




Source: The *Riksbank.*

Swedish monetary policy was actually tightened in 1994-1995. The ambition of the *Riksbank* was to combat the inflation tendencies in the wake of the Swedish export-led recovery, and

[7] The increase on yields on 10-year bonds 1994 was somewhat stronger in Sweden than in Finland (see Figure 3). This difference primarily reflected lower expected wage inflation in Finland, inter alia, reflecting the higher unemployment rate and the stronger coordination of industrial wage negotiations that year. Furthermore, actors on financial markets were probably uncertain about Swedish wage formation in the aftermath of the Rehnberg commission - an extraordinary tripartite incomes-policy arrangement in 1990-1992.

particularly to mitigate the inflation pressure after the weakening of the SEK (the *Riksbank* 1994, pp. 7-8, 1995, pp. 44-45). Thus, neither the previous increase in long-term yields on Swedish bonds nor the restrictive monetary policy 1994-1995 revealed a growing mistrust of the ability of Swedish governments to accomplish a public budget consolidation.

Similarly, the decreasing gap in long-term interest rates between Sweden and Germany in 1995-1996 was not caused by the ongoing fiscal austerity policy, but by expectations of a decrease in the *Riksbank*'s prime rate. And these expectations were not directly formed by fiscal policy but by the suspicion among speculators (later confirmed) that the SEK would be strengthened in 1995 by a restrictive monetary policy (and improvements in the Swedish trade balance) mitigating the threat to the *Riksbank*'s inflation target.

What more is, the decreasing yields on Swedish Treasury Bills and government bonds, more than half a year before the switch to a laxer monetary policy in January 1996, cast doubt on the hypothesis that the falling interest rates in Sweden reflected a nexus between frontloaded fiscal restraint and expansionary monetary policy (cf. Henriksson 2012). The reduction in the *Riksbank's* prime rate (the repo rate) in 1996 was primarily a consequence of weaker inflation pressure through the strengthening of the SEK (from mid-1995 until late 1996) and also through unexpected productivity increases in the Swedish economy (in the early 1996).[8] The steady slackening of monetary policy during the second half of the 1990s, notwithstanding a strong recovery of the Swedish economy, reflected a conspicuous productivity development (see next section) and a restrictive monetary policy in the past. Monetary restraint in the first half of the 1990s had succeeded, together with the economic crisis, in bringing down expected inflation and in establishing general confidence in the newly introduced inflation target.

Furthermore it is difficult to relate the convergence of Swedish and German long-term interest rates during the second half of the 1990s, and particularly the almost parallel development in these rates since the end of 1996, to Swedish economic policy in any which way. In fact, during the second half of the 1990s, there was a general convergence of long-term interest rates among the OECD countries. Thus, falling interest-rate differentials vis-à-vis

[8] Also the *Riksbank* downplayed the importance of the fiscal austerity policy for the lower inflation pressure and expansionary monetary policy in 1996 (see the *Riksbank* 1996a and 1996b).

Germany were not unique for Sweden, which downscales the impact of domestic factors, including the budget consolidation policy.

There was indeed a recovery of private investment and consumption in Sweden during the years of fiscal austerity. But the Swedish recovery was not consumption or even investment driven. The increase in private consumption in the mid-1990s was similar to that in the upcoming Euro countries (on average) (see the first column in Table A, Appendix 1). And this increase was actually weaker in Sweden than in the small open Western European countries and the OECD on average. Furthermore, the Swedish recovery in total investment in the mid-1990s was modest from an international perspective (see column two and three in Table A, appendix 1). There was a significant increase in private investment in the country, excluding residential investment (see column three). But the sharpest increase in these investments had already occurred in 1994-1995. Both nominal and real interest rates on Swedish Treasury bills and government bonds did actually increase during the second half of 1994 and the first half of 1995 (see Figure 1).[9]

Swedish investments in the mid-1990s were mainly induced by higher exports, reflecting an international recovery and a profit increase in manufacturing due to the depreciation of the SEK (see next section).[10] The profit share of value added in manufacturing reached a record level for the postwar period in the mid-1990s. Swedish depreciations largely explain why export growth and the share of the trade balance in GDP growth was higher in Sweden in the middle of the 1990s than in other OECD countries with the exception of Ireland and South Korea (see column one and three in Table B, appendix 1).

Thus, in the mid-1990s, fiscal austerity contributed strongly to budget consolidation, but not to the recovery of the Swedish economy. On the contrary, the restrictive fiscal (and monetary) policy at that time had contractionary effects, thus causing a delay in the Swedish

[9] What more is, there was an increase in both nominal and real interest rates in Sweden in 1997, thus in the period of budget consolidation. It is difficult, however, to attribute this increase to Swedish fiscal policies.

[10] In 1994-1995, the manufacturing sector's share of the increase in total investments at constant prices was between 68 and 79 per cent (depending on the choice of reference year). The corresponding shares were 46 and 51 per cent between 1994 and 1998. These shares were disproportionally high considering that the manufacturing sector's share of value added (constant prices) was between 17-20 per cent at the time (National Accounts of OECD Countries II, 2002 and 2005, table 10).

recovery after the deep economic recession of the early 1990s. Domestic-demand growth in Sweden was low from an international perspective (see column four in Table A, Appendix 1). Notwithstanding favourable circumstances such as a weaker SEK (1993-1995), an international recovery and a high potential for Solowian growth (see the absolute reduction in GDP in the early 1990s) Sweden experienced lower GDP growth than the OECD average 1996-1997 (see Table C, appendix 1). The improvement in Swedish labour market conditions in 1994-1995 came to a halt during the second half of 1995 when unemployment began to rise, and employment to fall, again. A sustainable employment recovery (and reduction in unemployment) in Sweden did not occur until the second half of 1997. By a standardized measure, Swedish unemployment peaked in 1997, thus not during the previous recession (OECD Economic Outlook 2012, no 2, Annex Table 14). Undoubtedly fiscal policy contributed substantially, albeit together with the stronger SEK (hampering export in 1996), to the Swedish economic backlash of the mid-1990s. Swedish fiscal austerity was definitely a success story from a cameral, although not from a stabilization policy, viewpoint.

**6. The real effects of fiscal austerity in the long run**

The initial fiscal austerity policy during a fragile recovery and the new institutions of economic policy (fiscal rules, inflation targeting, new budget procedures and central-bank independence) legitimate references to a new economic-policy regime in Sweden from the mid-1990s. The new regime seems to have been successful in terms of GDP growth, particularly in 1998-2007 (see Table C in Appendix 1). For example, despite Sweden's specialization in tele-products, the recession after the ICT crash in the early 2000s became mild and short-lived as in other OECD countries. However, the beneficial GDP development in Sweden since the mid-1990s was export, profit and technology led, and therefore not the result of fiscal austerity in the mid-1990s or the contemporary and subsequent fiscal reforms.

There is scant evidence that the fiscal rules increased Swedish GDP growth by producing a reduction in economic volatility. The radical rules, yet providing a room for countercyclical policy, seem to have created very favourable conditions for macroeconomic stability in Sweden. However Sweden and Switzerland were exceptions from the rule that fiscal rules have improved output stability in OECD countries (Badinger, 2009, p. 841). The study under review only covered the 1980-2002 period. But a proposition that Swedish fiscal rules did not reduce macroeconomic volatility is supported by the fact that economic fluctuations (the standard deviation of the output gap) were larger in Sweden than in the other Nordic countries, and

also larger than in the small open Western European countries on average, in 1998-2007 (Erixon 2011, p. 302).

What more is, declining interest rates, due to restrictive fiscal policy or other factors, were not a major explanation for the increase in Swedish investment in this period. In 1995-2007, Swedish investments were enhanced by an export recovery (through the export multiplier-accelerator), a profit boom, especially in manufacturing, and by extensive inventions and fierce competition in the ICT sectors, in which Sweden specializes. Fiscal austerity might have provided scope for the expansion of the export sector by freeing resources from construction and the service sector (public or private). However, in Sweden, as in many other OECD countries, the reduction of government budget deficits (as a share of GDP) through expenditure cuts in 1995-2007 primarily reflected a reduction in public transfers, not in public consumption (see Dahan and Strawczynski 2010, p. 22). There is still a possibility that labour abundance in the public sector freed resources for the expansion of manufacturing. But industrial (and regional) differences in labour market conditions play only a minor role for labour mobility in Sweden. And the relocation of labour from construction and services to manufacturing is of a limited scope (Israelsson, Strannefors and Tydén 2003). Besides, after a substantial increase during the years of public budget consolidation, the manufacturing share of total employment steadily decreased (despite an export boom), largely reflecting a boost in labour productivity in this sector up until 2007 (see below).

A weak currency laid the foundation for the Swedish export and profit boom of 1995-2007. The depreciation of the SEK, particularly in 1993 but also in 1994-1995, was followed by a new depreciation in 1996-2001. And Sweden maintained her competitive advantage in terms the exchange rate (and in terms of relative unit labour costs). In 2007 (2013), the competition-weighted nominal exchange rate was approximately 22 (13) per cent lower than immediately before the depreciation in 1992**.** According to Granger causality tests of the 1995-2013 (and 1995-2007) period, the weaker SEK had a powerful positive effect on Swedish export (volume) in the same quarter or with a delay up to three quarters (probably reflecting a negative relationship between relative prices and market shares).[11] And the weakening of the SEK also produced a positive effect on profits in Swedish manufacturing (during the same or subsequent quarter) especially if the years of global financial crisis are excluded. Higher actual

[11] The Granger causality tests presented in this article are based on the first differences of log-transformed quarterly data from the first quarter 1995 until the first quarter 2013.

profits stimulate investment by the salience of static expectations and retained earnings. Gross profits in the business sector (and manufacturing) had a strong positive effect on investments (in both current and constant prices) during the same quarter or with a one- to two-quarter lag.[12]

From the mid-1990s until the global financial crisis Sweden was in two respects blessed with an advantageous conformation of export. Tele-products made a major contribution to the recovery in Swedish export during the second half of the 1990s. The share of tele-products in Swedish export value rose from 9 per cent to 17 per cent in 1995-2000 and the share of Ericsson, the leading domestic producer of tele-products, in Swedish exports was almost 20 per cent in 2000 (Erixon 2011, pp. 309-310 and export data from Statistics Sweden). Because of fierce price competition in telecommunication industries, the increase in the export share of tele-products was even more pronounced in volume terms.

Sweden's export composition was also beneficial in 1995-2007 by means of the country's specialization in raw materials (wood products, iron ore, iron and steel products) and investment goods other than telecommunications equipment. Low and medium tech industries actually replaced the ICT sector as the Swedish export engine after the ICT crash in the early 2000s. On the strength of their low import share, the raw materials industries (and hence Sweden's net export) benefitted specifically from the depreciations of the SEK. And these industries profited from high demand and price increases in world markets, especially in the 2000s, through the South-East Asian growth miracle. In 2010-2011, for the first time in the history of Swedish industrialism, other countries than the US and the original EU countries made a major contribution to a Swedish recovery.[13]

The partly overlapping, partly sequential success of the advanced ICT sector and the traditional export industries resulted in a steady increase in the export share of Swedish GDP between 1995 and 2007. Sweden attained a current-account surplus in the mid-1990s. And

[12] However Johansen cointegration tests based on log-transformed level data were unable to display a significant positive relationship between profits and investments in the long run at longer lags than four quarters.

[13] In 2011 the Asian share of Swedish export (value) increased to 13 per cent. Moreover, this year, Norway replaced Germany as Sweden's main export country (National Board of Trade 2013).

notwithstanding the negative terms-of-trade effects of tele-product specialization, the Swedish current-account surplus increased steadily in 1996-2007 (OECD Economic Outlook 2012, no. 2, Table 51). At the time of the outbreak of financial crisis Sweden had obtained a larger surplus in the current account, as a ratio of GDP, than any other OECD country, with the exception of the oil producer Norway (and Luxembourg). The improvement in the Swedish current account balance was particularly strong in the 2000s reflecting, inter alia, the low import ratio of the raw materials industries. In 1995-2007(-2011) the net-export share in GDP growth was high in Sweden compared to that of other OECD countries (see column four in Table B, Appendix 1).

Furthermore, good productivity performance enlarged the potential for high GDP growth in Sweden in the period 1996-2006. Similarly to other countries with a strong ICT sector (USA, Finland, Ireland and South Korea) Sweden experienced a 'productivity miracle' in this period. In 1993-2005 tele-product industries accounted for 30 per cent of the high labour productivity growth in the Swedish business sector (Lundgren 2007, pp. 26-30) and, in the second half of the 1990s, for almost all of the high growth in total factor productivity (TFP) in this sector (Edquist 2009, p. 36). Tele-product industries boosted Swedish productivity growth by the productivity increases within firms and by the industries' increasing share of total employment. In 2000-2005, other industries' use of ICT knowledge made the most important contribution to TFP growth in the Swedish business sector. The Swedish productivity wonder bore hardly any relation to the economic policy (or the monetary and fiscal rules) of the 1990s but could be explained predominantly by the country's specialization in industries with large technological opportunities and fierce global competition and basically by the openness of the economy and the salience of cultural and historical factors.[14]

A regression study based on quarterly data for 1995-2013 confirms that investment (constant prices) in Swedish manufacturing, and also in the Swedish business sector as a whole, was determined mainly by exports (probably reflecting the impact of the export multiplier-accelerator) and, although to a lesser extent, by actual profits and productivity shocks with a lag. The regression results for the Swedish business sector 1995-2013 are

[14] It is uncertain whether the Swedish ICT wonder can be explained by the deregulation wave in the 1990s. Also during earlier decades, the industrial networks around and spin-offs from Ericsson, the Swedish flagship in tele-product industries formed in 1876, played an important role for industrial renewal in the country.

presented in Appendix 2.[15] The real interest rates were dropped from all investment equations, as the coefficients were insignificant and mostly positive. The real interest rate was defined as the nominal interest rate on Swedish Treasury Bills less expected inflation (see Figure 1) or, alternatively, as the nominal interest rate on 10 year bonds less actual inflation. On the other hand, the regression equations comprise a nominal interest-rate argument. In 1995-2013 this variable had a significant influence on investment in the business sector after five quarters. The importance of the nominal interest rate seems to be at odds with the rational expectation theory emphasizing the strategic role of the real interest rate for real investment. But there are indications that lower (higher) nominal interest rates contributed to the weakening (strengthening) of the SEK in 1995-2013.[16] In any case, the nominal interest rate had only a minor effect on investment both in Swedish manufacturing and in the Swedish business sector as a whole. Furthermore, a Johansen cointegration test could not disentangle a long-run negative relation between the real or the nominal interest rate and investment in the Swedish business sector (or manufacturing) between 1995 and 2013 (or 2007).[17]

The minor impact of long-term interest rates on investment, and insufficient evidence that the Swedish fiscal rules have contributed to less economic fluctuations, are critical for the hypothesis that Sweden's favourable economic development since the mid-1990s reflected fiscal restraint. Besides, the exogeneity of the fiscal rules and new budget processes in the 1990s can, in the Swedish case, be called into question. These reforms were largely induced by the deep economic crisis in the early 1990s (see Section 2).[18]

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[15] The results are almost identical for periods excluding the current financial crisis and for manufacturing. However, in 1995-2007, productivity shocks were less important for investment in the business sector, although not for investment in manufacturing. Besides, there were no indications at all of a negative relationship between nominal interest rates and investment in this period. Surprisingly, the regression analysis could not distinguish any independent role for the exchange rate (the coefficients had low t-values and unexpected signs).

[16] Granger causality tests envisage that the changes in the Swedish nominal bond rates in 1995-2013 and 1995-2007 had the expected effects on the SEK with a delay of one to three quarters.

[17] All Johansen tests in the study were based on log-transformed quarterly level data. The tests were consistently preceded by a Dickey-Fuller test of unit roots confirming the necessary requirement that variables are non-stationary at levels and stationary in first differences. Investment and inflation data were obtained from Statistics Sweden, nominal interest-rate data from the *Riksbank* and data on expected inflation from the National Institute of Economic Research (*Konjunkturinstitutet*).

[18] However it cannot be excluded that the fiscal rules played an independent role by having prolonged the collective memory of the Swedish public budget crisis (see Flodén 2012, p. 20).

Conclusions about a successful new fiscal (and monetary) regime in Sweden are also challenged by the fact that Sweden has not been successful in all respects since the mid-1990s. The labour force participation rate never returned to the high levels prior to the deep recession in the early 1990s although Sweden still belongs to the group of OECD countries with the highest rates. Furthermore, the strict rules for fiscal policy and ultimately for monetary policy (the same inflation target 2 percent as for the UK and the EMU countries today) and the actual deviations from the inflation target are pivotal for explaining why Sweden never returned to the low rates of unemployment customary before the economic crisis of the early 1990s. Sweden and Norway (with an inflation target from 2001) have departed more from the target than other OECD countries. These countries have also undershot, not overshot, the target in contrast to other OECD countries with flexible exchange rates. Sweden's departure from the inflation target was a consequence of miscalculation of expected inflation (primarily unanticipated productivity shocks), too strong ambitions to fight inflation, as well as of the *Riksbank* prioritizing other goals than inflation (primarily stable housing and financial markets).

In 1998-2007 (and also in 1998-2012) Sweden climbed down a Phillips curve fairly similar to that for other small open Western European countries (except Finland), thus Sweden showed a high unemployment rate and low inflation rate in comparison with similar countries.[19] The country of full employment and relatively high inflation had become the country with one of the lowest inflation rates in the OECD. But Sweden was no longer the classic example of a country with low unemployment.

**7. Summary**

By its scope and implementation in the wake of a deep recession and in a country and by a party traditionally associated with full employment fiscal austerity was a noteworthy Swedish experiment in the mid-1990s. The tight fiscal policy pursued by the Social Democrat Minister of Finance Göran Persson (Prime Minister from March 1996) was largely based on a cameral concern for budget balance and a political fear of being in the hands of foreign asset holders. But the restrictive fiscal policy was legitimized by Persson's economic experts in the Ministry of

[19] Erixon (2011, pp. 304-305). The Phillips curves are based on the figures of annual inflation and harmonized unemployment tabulated in OECD Economic Outlook (various issues). The conclusions are similar whether the Swedish estimates are based on a consumer price index (as in the OECD statistics) or on a harmonized index of consumer prices (as in the OECD statistics for the Euro countries and the UK).

Finance, who referred to theories about the neutral or even expansionary effects of fiscal austerity.

This article maintains that fiscal austerity in the mid-1990s was not responsible for the Swedish recovery, neither in the short nor in the long term. On the contrary, notwithstanding a contemporary decline in household savings in alignment with the Ricardian equivalence, the restrictive fiscal policy actually delayed Swedish recovery from the deep crisis of the early 1990s. The reduction in (real) interest rates during the second half of the 1990s primarily reflected expectations about changes in monetary policy unrelated to fiscal policy and an international convergence process. What more is, the encouraging Swedish GDP development from the mid-1990s until the financial crisis was not explained by the tight fiscal policies or the ambitious fiscal rules but primarily by an international upswing and a favourable exchange-rate development and industrial composition. The industrial structure explains, inter alia, why Sweden was boosted by strong positive productivity shocks. Together with fiscal austerity, these factors also contributed to the achievement of a public budget balance already in 1998. The depressing conclusion for Greece, Spain and Portugal is that Swedish fiscal restraint in the mid-1990s did have contractionary effects and that the specific external, industry-structural and exchange-rate conditions for a similar recovery and rapid budget consolidation (a sustainable international recovery, a strong manufacturing sector and a national currency) simply do not exist in these countries. Besides, budget consolidation was not the main reason for the significant decline in the Swedish net public debt from the mid-1990s.

It shall not be denied that the financial markets might have needed a signal of Swedish fiscal restraint in the mid-1990s. Sweden had recent experiences of high inflation and large public deficits, and the inflation target for the *Riksban*k was new. But the fiscal policy certainly became too restrictive. Not only did fiscal austerity delay the Swedish recovery after the deep crisis in the early 1990s. Employment cuts through rationalization in municipalities and counties also reduced the quality of the welfare programmes, and led to a deterioration in health status of the female employees in the public sector. In 1998-2002 there was a dramatic increase in the amount and duration of reported sickness among women in the Swedish public sector. Productivity was enhanced at the expense of intensified stress and heavier workloads (Lidwall 2010).

The positive lesson from Sweden in the 1990s is that it is possible to establish a consensus about a non-populist economic policy in a democracy, and to accomplish painful

fiscal austerity measures even with minority governments. The negative lesson is that the introduction of a 'responsible' fiscal policy in Sweden was based on the uncritical acceptance of new economic thinking, obscuring the obvious conclusion that fiscal austerity has deflationary effects. The Swedish consensus on economic policy in the 1990s was, inter alia, based on an unfounded conviction among decision makers, well-known from the analysis of the psychology of financial markets, that this time is different. An analysis of the effects of Swedish fiscal policy cast doubt over the possibility for the European Commission, leading European politicians and international lenders, still thinking that this time is different, to lean on Swedish experiences when recommending fiscal austerity measures for the EMU countries currently in crisis.

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Table 1: Countries and periods with the strongest fiscal restraint in the OECD area 1970-2007 (general government). Percentage point changes in the cyclically-adjusted general balance (as a percentage of potential GDP), annual data

| | 3 years | 4 years | 5 years |
|---|---|---|---|
| Belgium 1993-1997 | 4.6 | 5.8 | 6.5 |
| Canada 1994-1998 | 4.8 | 7.5 | 5.9 |
| Finland 1996-2000 | 6.8 | 7.4 | 9.8 |
| Germany 1996-2000 | 7.4 | 7.7 | 9.8 |
| Greece 1994-1998 | 5.0 | 5.5 | 7.5 |
| Iceland (2002-2005) | 6.6 | 6.7 | |
| Ireland 1985-1989 | 6.0 | 7.5 | |
| Italy 1995-1999 | 4.7 | 5.1 | 6.1 |
| Japan 1999-2001 | 5.2 | | |
| Netherlands 1996-2000 | 7.1 | 8.0 | 8.6 |
| New Zealand 1989-1994 | 3.1 | 5.1 | 5.5 |
| Norway 1994-1997 | 4.1 | 5.4 | |
| **Sweden 1994-1998** | **7.3** | **7.8** | **8.7** |
| United Kingdom 1979-1982 | 6.5 | 7.1 | |
| United Kingdom 1995-1999 | 5.3 | 5.9 | 6.9 |

Source: Muller and Price (1984, table 1); OECD Economic Outlook, table 31 (no 1 2000 and 2002) and table 28 (no 1 2005, no 2 2010 and no 2 2012).

Appendix 1

Table A: Average annual (percentage) changes in real private consumption expenditure and in real total domestic demand, 1995-1997 and 1995-1998 (in brackets)

| | Private consumption | Private investment | | Domestic demand |
|---|---|---|---|---|
| | | Non-residential | Residential | |
| Sweden | 1,8 (2,1) | 12,0 (11,4) | -8,8 (-6,7) | 1,6 (2,3) |
| Denmark | 2,2 (2,2) | 9,7 (10,2) | 10,3 (8,2) | 3,8 (3,8) |
| Norway | 4,5 (4,0) | 10,5 (11,7) | 8,5 (8,4) | 5,1 (5,3) |
| Finland | 3,7 (3,8) | 13,7 (13,5) | 8,6 (8,3) | 4,2 (4,5) |
| Austria | 1,3 (1,4) | 3,6 (4,6) | 3,4 (1,4) | 1,7 (1,9) |
| Belgium | 1,4 (1,8) | 5,5 (5,6) | 2,1 (1,4) | 1,9 (2,3) |
| Netherlands | 3,3 (3,7) | 7,7 (7,1) | 3,3 (3,0) | 3,4 (3,8) |
| Switzerland | 1,1 (1,4) | 4,3 (5,7) | -3,6 (-2,0) | 0,8 (1,6) |
| SOWEC* | 2,4 (2,6) | 8,4 (8,7) | 3,0 (2,8) | 2,8 (3,2) |
| Euro area | 1,7 (2,0) | 4,1 (5,0) | 1,3 (1,3) | 1,8 (2,1) |
| Total OECD | 2,7 (2,8) | 8,0 (8,0) | 1,3 (1,4) | 3,0 (3,0) |

* Small open Western European countries (Sweden, Denmark, Norway, Finland, Austria, Belgium, Netherlands and Switzerland) on average

Source: OECD Economic Outlook 2004, 2012.

Table B: Annual percentage changes in export (volume) and the net-export share of annual GDP growth, averages for 1995-1998 (1995-1997 in brackets) and 1995-2007 (1995-2011 in brackets)

| | Export growth | | Trade-balance share of GDP growth | |
|---|---|---|---|---|
| | 1995-97(-98) | 1995-2007(-2011) | 1995-97(-98) | 1995-2007(-2011) |
| Sweden | 9,9 (9,7) | 7,4 (6,0) | 1.1 (0,8) | 0,8 (0,6) |
| Denmark | 4,0 (4,1) | 5,3 (4,3) | -0,7 (-0,9) | -0,4 (0,2) |
| Norway | 7,6 (5,9) | 2,7 (1,9) | 0,1 (-0,6) | -0,7 (-0,7) |
| Finland | 9,4 (9,4) | 8,1 (5,8) | 0,7 (0,8) | 0,7 (0,4) |
| Austria | 7,0 (8,1) | 7,3 (5.7) | 0,2 (0,4) | 0,7 (0,6) |
| Belgium | 6,2 (5,9) | 5,0 (4,2) | 0,6 (0,3) | 0,4 (0,3) |
| Netherlands | 8,2 (7,8) | 6,6 (5,6) | -0,1 (-0,3) | 0,3 (0,3) |
| Switzerland | 5,5 (5,0) | 5,8 (4,8) | 0,1 (-0,1) | 0,6 (0,5) |
| SOWEC* | 7,2 (7,0) | 6,0 (4,8) | 0,3 (0,1) | 0,3 (0,3) |
| Ireland | 16,7 (18,3) | 11,5 (9,1) | 2,8 (2,1) | 1,6 (2,0) |
| UK | 8,1 (7,0) | 5,5 (4,4) | -0,1 (-0,2) | -0,4 (-0,1) |
| Germany | 8,3 (8,0) | 8,0 (6,8) | 0,5 (0,3) | 0,7 (0,5) |
| USA | 10,1 (8,2) | 5,5 (5,2) | -0,1 (-0,4) | -0,4 (-0,2) |
| Korea | 18,7 (17,3) | 13,6 (12,1) | 0,3 (3,1) | 1,2 (1,3) |
| Total OECD | 8,9 (8,1) | 6,5 (5,4) | 0,1 (-0,1) | -0,1 (0) |

Source: OECD Economic Outlook, 2008 no 2 and 2012, no 2, Annex Table 9.

Table C: Real GDP growth 1991-1994 and 1995-2007 (annual averages) and 2007, 2008, 2009, 2010, 2011 and 2012

| | 1991-94 | 1995 | 1996 | 1997 | 1998 | 1995-2007 | 2008-2011 | 2012 |
|---|---|---|---|---|---|---|---|---|
| **Sweden** | **-0.1** | **4,2** | **1,5** | **2,7** | **3.7** | **3,0** | **1,1** | **1,2** |
| Denmark | 1.8 | 3,1 | 2,8 | 3,2 | 2,2 | 2,2 | -1,0 | -0,5 |
| Norway | 3.7 | 4,2 | 5,1 | 5,4 | 2,7 | 3,0 | 1,0 | 3,2 |
| Finland | -1.7 | 3,8 | 3,7 | 6,1 | 5,2 | 3,9 | -0,5 | -0,2 |
| Belgium | 1.4 | 2,4 | 0,9 | 3,7 | 1,7 | 2,3 | 0,6 | -0,3 |
| Netherlands | 2.3 | 3,1 | 3,4 | 4,3 | 3,9 | 2,9 | 0,2 | -1,0 |
| Austria | 2.2 | 2,4 | 2,3 | 2,4 | 3,7 | 2,6 | 0,6 | 0,8 |
| Switzerland | -0.9 | 4,2 | 1,5 | 2,7 | 3,7 | 1,9 | 1,3 | 1.0 |
| SOWEC* | 1.1 | 3,4 | 2,7 | 3,8 | 3,4 | 2,7 | 0,2 | 0,5 |
| Ireland | 3,4 | 9,6 | 8,1 | 11,5 | 8,4 | 7,3 | -1,8 | 0,9 |
| UK | 1.5 | 3,0 | 2,9 | 3,3 | 3,6 | 3,2 | -0,6 | 0.3 |
| Germany | 2.1 | 2,0 | 1,0 | 1,9 | 1,8 | 1,7 | 0,7 | 0.9 |
| Euro area | 1.9 | 2,5 | 1,5 | 2,6 | 2,7 | 2,3 | -0,2 | -0,5 |
| US | 2,5 | 2,5 | 3,7 | 4,5 | 4,2 | 3,1 | 0,2 | 2,2 |
| Korea | 7,5 | 9,2 | 7,0 | 4,7 | -6,9 | 5,1 | 3,1 | 2,0 |
| OECD | 2.0 | 2,6 | 3,1 | 3,7 | 2,7 | 2,8 | 0,4 | 1,4 |

Source: OECD Economic Outlook, no. 1 2005 and 2008, no. 2 2008 and no. 1 2013.

Appendix 2

Table A: The determination of investment in the Swedish business sector, 1995 quarter 1 – 2013 quarter 1

| Real investment = | -0.01 + | 0.94 * export + | 0.34 * gross profits (-2) + | 0.34 * labour productivity(-1) – | 0.15 * interest rate(-5) |
|---|---|---|---|---|---|
| | (-1.45) | (11.75**) | (13.04**) | (2.74**) | (-2.21*) |

Number of observations: 73

Adjusted R-squared: 0.90 Durbin-Watson statistics: 2.67 F-statistics: 168.26

t-statistics are presented in parentheses. * Significance at 5 % level. ** Significance at 1 % level

Comment: The OLS estimates are based on first differences of log-transformed raw data. Real investment is gross physical investment in constant prices. Export is the volume of commodity exports. Gross profits are expressed in value terms. Labour productivity is value added in constant prices as a ratio of labour hours. The (nominal) interest rate is yields on 10 year government bonds. The interpretation of the contemporary relationship between export and investment is based on the assumption that investment cannot have a positive effect on export in the same quarter, particularly in the business sector as a whole. The assumptions about the lag structure in the case of the profit, productivity and interest-rate variables are based on Granger causality tests and on theories about delays in their influence on investment. Statistical source: Statistics Sweden, national accounts (investment, value added, labour hours, gross profits and export) and the *Riksbank* (nominal interest rates).