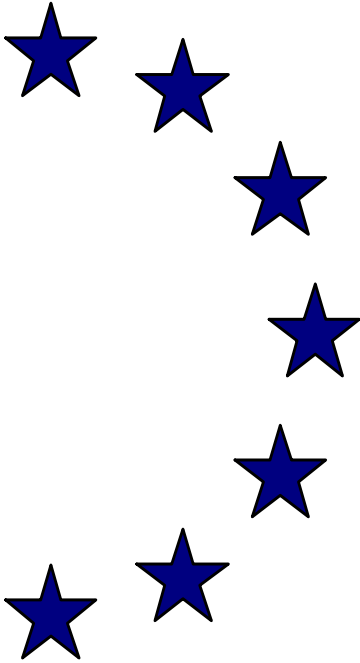


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**How costly was the crisis of the 1990s?
A comparative analysis of the deepest crises in
Finland and Sweden over the last 130 years**

by

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HOW COSTLY WAS THE CRISIS OF THE 1990s?

A comparative analysis of the deepest crises in
Finland and Sweden over the last 130 years.

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March 18, 2005

Abstract: In the 1990s the world economy was hit by a series of unusually deep crises with far-reaching consequences, the first of which occurred in Finland and Sweden. This paper compares the cost of the crisis of the 1990s with the costs caused by all major crises and depressions since the 1870s in the two Nordic countries. First, it constructs a crisis chronology for Finland and Sweden. Second, it estimates the cost of every major crisis in terms of real income, industrial production and employment foregone.

The numerical results demonstrate the severity of the crisis of the 1990s. It is one of the worst crises that have hit the two Nordic countries, on a par in several respects with the crisis of the 1930s, commonly regarded as the greatest crisis in modern history. The crises of the 1990s in Finland and Sweden were as severe as those that hit the world during the exceptionally crisis-ridden interwar period. However, the output losses in both countries during World War I and II remain higher than those of any peacetime crisis, notwithstanding Sweden's neutrality in both wars.

Key words: Financial crisis, economic crisis, depression, cost of crisis, output loss, Finland, Sweden.

JEL classification: E 32, E 63.

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Please note: The views and opinions expressed here are those of the authors. They do not represent the views of DG ECFIN or the Ekonomistyrningsverket.

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1. Introduction¹

In the 1990s the world economy was hit by a series of unusually deep crises, the first of which occurred in 1991-92 in Finland and Sweden. The depression in these two Nordic countries has much in common with those that occurred later in the decade in Mexico, South-East Asia, Russia, Brazil and Turkey. Although the downturn in economic activity in the early 1990s in Finland and Sweden is commonly regarded as exceptionally severe – associated with deep and lasting effects on the economy, institutions and policies of both countries – we lack systematic comparisons between the crises of the 1990s and other major episodes of crisis or depression.

The purpose of this paper is to add to our understanding of the turbulent 1990s by comparing the cost of the depression of the 1990s with the costs caused by the major crises since the 1870s in the two Nordic countries. We adopt an approach developed by IMF (1998) and extended by Bordo et al. (2001) where the cost of a crisis is estimated in terms of output growth foregone. In these two studies the output losses of a large number of crises are compared across countries and time. Here, by contrast, we focus only on the experience of Finland and Sweden, calculating the cost of crises using three measures: loss of real income growth, loss of industrial production growth and loss of employment growth. We cover the experience of World War I and II as well.

The paper is organized in the following way. We first identify all major crises that have occurred in Finland and Sweden since the 1870s. Second, we calculate the costs of crises in terms of real income, industrial production and employment foregone. Next, we briefly describe each crisis and consider its costs. Third, we compare the Finnish and Swedish record with each other and with the international pattern. The last section summarizes.

¹ We are indebted to Patrik Walldov for compiling data, constructing tables and drawing figures and to Michael D. Bordo, Jesper Hansson, Sakari Heikkinen, Risto Herrala, Riitta Hjerppe, Olle Krantz, Antti Kuustera, David Mayes, Heikki Oksanen, Daniel Waldenström and Lars-Erik Öller for helpful suggestions. Editorial help by Sophie Bland is gratefully acknowledged.

2. Identifying major crises

How do we identify a crisis? When should a downturn in economic activity (a recession) be classified as a crisis? There is no straightforward answer to these questions as there is neither a commonly accepted definition nor a common theory of crises.² Here we define a crisis as “*an exceptionally sharp decline in economic activity*”, hence, the larger the decline in real income (GDP) growth, the deeper the crisis. This simple rule of thumb will guide us in the following sections.

We identify the episodes that should be classified as crises in Finland and Sweden using the following strategy. As a first step we investigate which selection of years researchers and other observers have defined as crisis years in the economic history of the two countries. Then we examine how a number of key macroeconomic time series have evolved from the early 1870s to the late 1990s. This set of data has not previously been analysed to account for crisis episodes. We identify the years with the largest declines in the growth of real income (GDP), industrial production and employment. Lastly, we compare how well these episodes correspond to the classification of crises made in previous research. By combining these two sources of information, we arrive at a crisis chronology from which we calculate the cost of crisis.

Our chronology covers the deepest downturns or recessions that have hit the Finnish and Swedish economies in the past 130 years. Thus, a crisis is synonymous with a depression in our analysis. Finland and Sweden have also experienced minor banking and currency crises with no or little impact on real activity. Such episodes are not covered by our chronology.

2.1. Finland

i) The judgment of economic historians and economists. Comparing the most severe depressions in Finland since the 1870s, Hjerppe (1989) finds the depressions during the two world wars to have been the most severe. The crises of the 1870s and the 1930s also had

² See for example the introduction by Krugman (2000), where he notes that “we know [currency crises] when we see them”. Similarly, in a comment on the work by Bordo et al. (2001), Rose (2001) suggests that “the crisis literature is in crisis”, arguing that empirical measures of the cost of crises may be a way of improving our knowledge of crisis. We take his view as a source of inspiration for our study of Finnish and Swedish crises.

significant, long-lasting negative effects, while the oil crises of the 1970s (OPEC I and II) were milder. Heikkinen and Kuusterä (2001) identify the following economic crises in Finland during the 20th century: “World War I and its aftermath” (1914-19), “the Great Depression” (1929-32), “the latent crisis of the turbulent fifties” (1953-58), “the stagflation years” (1975-77) and “the deregulation crisis” (1990-93).

Herrala (1999) examines financial crises in Finland since 1862. These have generally occurred at the same time as depressions. He classifies as major depressions the crisis of the 1870s, World War I, the Great Depression of the 1930s and the crisis of the 1990s. He also identifies major economic shocks that did not lead to banking problems. These shocks occurred during the 1880s, the international financial crisis of 1907, World War II, 1952-53 and the OPEC crises.

Judging from these sources, the most severe downturns in the Finnish economy during the last 130 years occurred during the 1870s, World War I, the 1930s and the 1990s. Other periods, such as World War II, the 1950s and the oil crises of the 1970s are also classified as periods of dismal economic performance.

ii) Key macroeconomic time series. Charts 1, 2 and 3 show the annual percentage change in real income (GDP), industrial production and employment in Finland for the period 1872-1996. According to our definition, an economic crisis is associated with a sharp and exceptionally large decline in economic activity. Therefore, our chronology should include those years with significant decreases in these series.

All the downturns classified as crises by economic historians and economists are associated with significant declines in real income. For World War II a sharp drop is also registered. During the 1950s and the OPEC crises, however, growth did not fall markedly.

Industrial production has, as might be expected, fluctuated more than real income. Its largest drops are recorded during the same periods as for real income, namely the crisis of 1877-78, the two world wars, the 1930s and the 1990s. The first OPEC crisis is associated with a minor decline, as is the early 1950s.

Employment has not fluctuated as much as the two production series, but an identical pattern is discernible. The largest declines during peacetime conditions occurred during the crises of the 1990s and the 1930s. The crisis of 1877-78 saw the largest decrease during the period prior to World War I. OPEC I resulted in declines similar to those that occurred during the non-crisis years of the 1960s.

The evidence from the time series confirms the identification made by economic historians and economists of the periods of 1877-78, the 1930s, the 1990s and the two world wars as crisis episodes. The downturns in economic activity experienced in OPEC II and the latent crisis of the 1950s, however, were not much more severe than “ordinary” cyclical downturns. OPEC I, by contrast, was associated with prolonged declines in employment and reductions in production growth. For this reason we also include OPEC I in our chronology. To summarise, the major economic crises in Finland over the last 130 years have been those of 1877-78, the 1930s, the 1990s, OPEC I and the two world wars.

2.2. Sweden

i) The judgment of economic historians and economists. In a study of business cycles and economic policies in Sweden, Lundberg (1953) classifies 1920-22 and 1931-33 as crisis years. Thirty years later Lundberg (1983) examines four major crisis periods: the early 1920s, the early 1930s, and OPEC I and II. Lindgren (1993) focuses on the financial aspects of the crises of 1877-78, the early 1920s and the 1990s. Jonung (1994) compares quantitatively the crises of the early 1920s and the early 1930s, the OPEC crises and the crisis of the early 1990s. Jonung (1999) contrasts economic policies and outcomes during the OPEC crises and the crisis of the 1990s. Contemporary observers also classified 1907-08 as crisis years; see e.g. Cassel (1908) and Sveriges Riksbank (1909). Hagberg and Walldov (2000) treat 1907-08 as a period of crisis, as does Schön (2000).

The literature on Sweden’s economic and financial history thus identifies seven major crises: 1877-78, 1907-08, the early 1920s, the early 1930s, OPEC I and II, and the 1990s. The two world wars, when Sweden remained neutral, are not commonly analysed as crisis years.

ii) *Key macroeconomic time series.* As regards the statistical evidence, Chart 4 displays the annual percentage changes in real income in Sweden 1872-1996. Charts 5, 6 and 7 reproduce similar series for industrial production, employment and the number of bankruptcies.

Chart 4 confirms the judgment of economic historians. All crises except OPEC II are associated with a sharp reduction in the level of real income. However, the largest fall in real income did not occur during these episodes but at the end of World War I and at the beginning of World War II. Prior to World War I, several years during the classical gold standard display absolute declines in real income although they have *not* been classified by economic historians as crisis years. OPEC II does not stand out as a major crisis – real income growth remained positive – although contemporary observers including Lundberg (1983) regarded it as such.

Chart 5 demonstrates that the evolution of industrial production is in accordance with the assessments by economic historians and economists. The largest declines occurred during the seven major crises mentioned above and during the two world wars. Employment in Chart 6 declined during these crises, most noticeably during the crises of the 1920s, the 1930s and the 1990s as well as during World War II. The OPEC crises saw barely any decline in employment most likely reflecting the impact of active labour market policies applied in the 1970s.

As shown in Chart 7, almost all of the peacetime crisis periods are associated with large increases in the number of bankruptcies. However, during the two world wars and OPEC I no notable increase was recorded. Indeed the number of bankruptcies actually declined during most of these years.

Taken separately, none of charts 4-7 is entirely consistent with the crisis chronology found in the work of economic historians. Significant declines in real income, industrial production and employment as well as increases in the number of bankruptcies have occurred during years other than those classified as crisis years. Put together, however, the charts give us no reason to contest the judgment of the economic historians. The two world wars are often not considered to have been economic crises but they stand out as being periods of exceptionally sharp swings in economic activity. For this reason we also include them in our sample.

To conclude, we select the following years to be studied as crises in Sweden: 1877-78, 1907-08, the early 1920s, the early 1930s and the early 1990s, the two OPEC crises and the two world wars.

3. Defining the cost of crisis

What is the cost of a crisis? The answer depends on whether the intention is to study the fiscal costs or the costs to the economy as a whole. The fiscal costs, i.e. government support to industries or commercial banks and other types of financial institutions, should be viewed as transfers from taxpayers to a specific group of actors within the economy, such as depositors in the case of a banking crisis, and thus not necessarily as a cost to society at large (see e.g. Caprio and Klingebiel (1996)).³ The cost to society of a crisis should be measured in terms of foregone output or foregone output growth. The IMF (1998) suggests a measure of output loss for estimating the costs of crises to the economy which have widely adopted, for instance by Aziz et al. (2000) and Bordo et al. (2001).⁴ We build here on this approach by focusing not only on the loss of real income (GDP) but also on the loss of industrial production and employment to get a broad picture of the costs of crisis.⁵

The output loss – or more precisely the loss in output growth – as defined by the IMF approach is calculated by totalling the differences between the trend growth rate of real income (GDP) and the actual growth rate from the start of the crisis until the growth rate of the series returns to trend rate. The estimated loss in output growth is thus dependent not only on how the series measured evolves during the crisis but also on how the trend rate is defined and the exact dating of the start and end of the crisis. Let us look at these two aspects of the estimation procedure.

³ However, fiscal costs may cause deadweight costs affecting the general economy, especially if the raising of social funds is subject to large marginal costs; see Hoggarth et al. (2001, p. 12, note 5).

⁴ Hjerpe (1989) used similar methods to calculate the loss of production of Finnish depressions 1876-1980. Her results are in line with those presented here.

⁵ The cost of crisis literature has recently been advanced by relating the cost of crisis to variables measuring for example the degree of leverage, the openness to trade, the quality of institutions, IMF support, the design of fiscal and monetary policy. See Barrell et al. (2004), Claessens et al. (2004) and Hutchinson (2003).

The definition of the trend rate. Ideally, the trend should reflect the development of real income growth had the negative shock/crisis *not* occurred. It is impossible to carry out such a counterfactual analysis accurately. In the literature on output loss the usual solution to this problem is to simply assume that the economy would continue to grow at a rate equal to the average growth rate prior to the crisis. In IMF (1998) a three-year trend is used. Bordo et al. (2001) adopt a five-year trend. One major criticism of this method is that output growth prior to crises tends to be unsustainably high. Thus the output loss will overstate the severity of the crisis (see e.g. Mulder and Rocha (2000, p. 5)). A five-year trend, such as the one we use below, should therefore be preferred to a three-year trend.

Since we are interested in the relative severity of the crisis of the 1990s, the absolute value of the output loss would matter only to the extent that the size of the cost of crisis is affected differently by the assumed trend rate across the crises we study. However, we conclude that this is not the case, whatever definition of the trend rate is used (see Appendix).

The dating of the start and the end of a crisis. The longer the crisis lasts, the larger the output loss will be. Determining the points in time between which the loss should be calculated is thus of crucial importance. In studies such as Aziz et al. (2001), Bordo et al. (2001), Hoggarth et al. (2001) and IMF (1998), the aggregate output loss has been used to measure the real effects of financial crises. As we are studying economic crises, defined as periods with severe decreases in aggregate economic activity, and not crises in a single sector of the economy, the beginning is defined simply as the first year in which a large decline in the aggregate growth rate is recorded. The loss is then calculated until that year in which the growth rate once again equals or exceeds the trend rate.

Formally, the cost of crisis is calculated as

$$\text{Loss in output growth} = \sum_{t=t_0}^{t_n} (y^* - y_t)$$

where y^* is the trend and y_t is the observed (actual) percentage change in real income. The loss in growth is calculated during the period when $y_t < y^*$. The loss of industrial production and of employment is calculated in the same way. Table 1 summarizes the estimates of the cost of the deepest crises for Finland and Sweden measured in this way. The calculations are also displayed in Chart 8.

4. Brief accounts of the crises

Both Finland and Sweden are commonly regarded as small and open economies during the period we study. Given this openness and thus the importance of international trade to the two economies, it should not come as a surprise that the economic crises in Finland and Sweden occurred during periods of international economic slowdown. As seen from Table 1, economic crises have also often coincided in the two countries. In this section we present short descriptions of the crises and their costs.

4.1. The crisis of 1877-78

After the Franco-German war in 1871, the European economy boomed, raising the demand for Finnish and Swedish exports. In Finland, this caused a speculative boom in forest land. When the price of forest products began to decline later in the decade, the country was driven into a severe depression. Bankruptcies increased markedly, especially in the sawmill industry, and real income started to decrease in 1877 (Herrala (1999, p. 10)). The recovery did not start until 1882. This crisis was later dubbed “The Long Depression” (Hjerppe (1989, p. 56)). Domestic demand growth spurred the recovery, while exports remained depressed (Hjerppe (1989, p. 47)).

In Sweden, the railway industry expanded dramatically during the boom of the early 1870s. However, as the economy started to contract, the demand for transportation fell. It soon became evident that a bubble had burst. With large portfolios of railway bonds and thus strong exposure to the railway industry, many financial institutions suffered substantial losses. By the end of 1877 a major financial crisis was looming. The problems in the financial sector were reflected in the money stock. In 1878-79 it fell by more than 10 per cent (Jonung (1975)).

The combination of a domestic financial crisis and declining international demand caused a fall in economic activity. Real income declined for two years in a row, in 1877 and 1878. Industrial production fell by almost 9 per cent in 1878. Although labour market conditions worsened considerably, employment fared better, with almost no change in the number of employed recorded. The recovery began already in 1879, when financial stability was restored and international demand increased. However, the 1880s have been characterised as a

protracted recession (Heckscher (1960, p. 296)). Prices fell, export growth was weak and Sweden experienced large-scale emigration.

The crisis of the 1870s was more costly in Finland than in Sweden. Loss of real income was more than twice as high in Finland: 24.2 percentage points compared to 11.3 in Sweden, due to the longer duration of the crisis in Finland (Table 1). However, average loss per year was larger in Sweden.

Industrial production in Finland was particularly hard hit. However, the industrial sector was smaller in Finland than in Sweden and consequently this did not affect the aggregate economy to the same degree. The loss of industrial production in Sweden amounted to 14.7 percentage points, accumulated over two years – 1877-78 – whereas the loss in Finland was about five times that figure. Employment was less affected than production in both countries. In Finland a 5.9 percentage-point loss of employment is recorded for the years 1878-79. The Swedish decline in employment started a year earlier. The total loss was a moderate 3.1 percentage points.

4.2. The crisis of 1907⁶

International financial tension emerged in 1906 with financial crises in Italy and Japan. Gold scarcity forced the Bank of England to raise its discount rate to halt gold flows to the US.⁷ The US eventually became the centre of the international crisis of 1907. The American economy entered a recession during the spring of 1907. During the summer the copper market collapsed. The banking sector came under stress. In October the Knickerbocker Trust Company went bankrupt. This sparked a severe banking crisis in New York, resulting in bank runs and declining money supply (Friedman and Schwartz (1963) and Wicker (2000)). The ensuing financial unrest and recession spread quickly throughout the industrialised world.

⁶ This section is based on Hagberg and Walldov (2000).

⁷ Neal and Weidenmier (2002, pp. 497-501) argue that the initial cause of the international crisis of 1907 was the devastating earthquake that hit San Francisco in April 1906. British insurance companies, forced to pay out on earthquake insurance, started payments in October 1906. This outflow caused the Bank of England to raise the discount rate sharply. Later, when it lowered the rate in January 1907, it refused to discount any bills from the US. This step cut off the New York trust companies from their usual source of liquidity.

Finland did not suffer severely from the international downturn. It maintained its financial stability, though a decline in exports lowered industrial output. The large agriculture sector fared well and real income growth remained positive.

Sweden, on the other hand, was hit much harder than Finland. The financial system played an important role in the transmission of the international downturn into the Swedish economy. During the preceding boom, commercial banks had increased domestic lending and financed the credit growth by short-term borrowing on the international capital markets, especially in Germany. During the international turmoil in the fall of 1907, it became increasingly difficult to renew foreign loans. Almost fifty percent of short-term foreign debt had to be repaid.

The Riksbank, the Swedish central bank, stepped in as a lender of last resort and allowed commercial banks to rediscount bills to obtain foreign currency. This action by the Riksbank limited the extent of the banking crisis, though 16 banks went bankrupt or were reconstituted (Schön (2000, pp. 263-64)). As new credit became increasingly costly to obtain, industries such as building and construction fell into a slump. Iron, mining and forestry were also hit hard whereas the paper and pulp industry fared better.

The international recovery started in 1908, but in Sweden worsening labour market conditions, culminating in a general strike in 1909, hampered growth. More than 300 000 workers were involved in the strike and more than 11 million working days were lost (Jörberg (1961, p. 307)). It was not until the second half of 1909, when the strike had ended, that the Swedish economy started to recover. In 1910 growth returned to positive figures and a boom began that would last almost uninterrupted until the outbreak of World War I.

Though the crisis in Sweden began during the latter part of 1907, growth rates for that year remained positive. The subsequent two years, on the other hand, show a contraction of economic activity. The loss of real income during 1908-09 was 11.2 per cent and the loss of industrial production 17.3 percentage points. Employment was not affected as much as production. Only small reductions in the number of employed persons were recorded during 1908-09. The total loss amounted to 1.2 percentage points (Table 1).

4.3. The crisis of the 1920s

A strong international boom, fuelled by pent-up demand from the war, expansionary economic policies and speculative stock buying, started at the end of World War I (Aldcroft (1994, pp. 25-26)). Inflation continued to increase. In 1920, the leading economic powers adopted contractionary monetary policies. The overriding goal was to return to the gold standard, preferably at the pre-war parity exchange rate. The deflation required to reach this goal was the prime cause of the slump that followed. The international recovery did not start until 1922, when deflation ceased.

Finland, which had suffered during World War I by virtue of being a grand duchy of the Russian Empire and in the civil war following the declaration of independence in 1917, had experienced high inflation. Prices rose by more than 800 per cent between the outbreak of war in 1914 and 1920 (Haavisto and Jonung (1995, p. 253)). This record rendered a return to the pre-war exchange rate for the Finnish currency politically difficult. Thus, a deflationary policy was not adopted. By this choice Finland was able to avoid a sharp downturn and growth remained positive.

In Sweden inflation during the war years was high, but not as high as in Finland. After a long debate it was decided that the krona should be brought back to its pre-war gold parity, which required the adoption of tight monetary policies. The effects were staggering. Between 1920 and 1922 wholesale prices fell by almost 60 per cent and consumer prices by 30 per cent. By the end of 1922 the krona had returned to the pre-war rate, though Sweden did not officially return to the gold standard until 1924.

The tightening of monetary policies was not the only reason for the severe deflation that occurred during the early 1920s, but it was the primary cause. Other contributory factors included falling international prices due to deflationary policies in other countries (Boksjö and Lönnborg-Andersson (1994, p. 19), Lundberg (1983, p. 68) and Fregert and Jonung (2004)).

The fall in domestic prices as well the international slump pushed the Swedish economy into its deepest peacetime recession. In 1921 real income fell by 5.5 per cent and industrial production by almost 16 per cent. The crisis was deep but short-lived. Recovery was well

under way in 1922, when GDP grew by 10 per cent and industrial production by 17 per cent, in spite of a severe banking crisis that culminated in that year.

As the crisis in Sweden was brief in time, the cumulative loss of real income – totalling 9.6 percentage points – turned out lower than during any of the other major crises although the average loss per crisis year was the highest (Table 1). However, the loss of industrial production was relatively high. For the first time, a crisis in Sweden resulted in significant loss of employment. The deflation led to large increases in real wages during 1921, which contributed to a total loss of employment of 8.4 percentage points.

4.4. The crisis of the 1930s

The great stock market crash in October 1929 in New York is often taken as the start of the worst international recession on record. Over the course of three years, the real income of the leading economic power, the US, fell by more than one third. The depression spread to the rest of the world – including Europe – through finance and trade, where it eventually became extremely severe. The default of the largest Austrian commercial bank *Kreditanstalt* in 1931 sent a financial shock wave through the continent, which ultimately forced several countries, notably Britain, to abandon the gold standard in September 1931. Countries that left the gold standard early and let their currencies devalue fared better than those that stayed on longer (Eichengreen (1992)).

In Finland the depression started a few years earlier than in most of Europe. Real income growth peaked in 1928. In that year a crop failure, which led to an increase in imports, and growing competition from the Soviet Union in the sawn goods market created a substantial trade deficit. A year later the overheated building industry collapsed as the money market got tighter and a three-year-long decline in GDP commenced ((Hjerpe (1989, p. 48) and Herrala (1999, p. 12)). Private consumption fell considerably – four times as much as GDP – during the depression (Heikkinen and Kuusterä (2001, p. 33)).

The recovery that began in 1932 has been attributed both to the abandonment of the gold standard in late 1931 and to flexible wages. The markka depreciated markedly after Finland was forced off the gold standard. This benefited the export-oriented sawmill, pulp and paper industries (Heikkinen and Kuusterä (2001, p. 34)). The private sector was also helped by

nominal cuts in wages that were so large that, in spite of the deflation, real wages decreased in several industries (Böckerman and Kiander (2001, p. 9). The Finnish economy recovered strongly. Growth was rapid throughout the 1930s.

The Finnish economy started to contract in 1929 with losses of real income recorded until 1932 of a total of 24.3 percentage points. Industrial production started to fall a year later and did not return to its pre-crisis trend until 1933, resulting in a loss of industrial production of 46.4 percentage points. The employment loss amounted to 16.4 percentage points in 1929-32 (Table 1).

The Great Depression hit the Swedish economy in late 1931. Falling exports reduced aggregate demand, employment and industrial production. The international reserves of the Riksbank declined due to capital outflows. Sweden was forced to abandon the gold standard and allow the krona to float in September 1931, shortly after the pound left the gold standard. A policy of price stabilisation was adopted. The depreciation that followed allowed Sweden to isolate itself from the international economic turmoil. Thus, both Finland and Sweden adopted a floating exchange rate at an early stage of the depression, alleviating the negative effects from the international downturn.

At first, the decline in economic activity did not pose a major threat to the financial system. However, the death of the financier Ivar Kreuger set off a series of bankruptcies in the spring of 1932. Several large banks were heavily involved in Kreuger's businesses and suffered considerable losses, in particular the *Skandinaviska Banken*. Once again the government intervened to secure the stability of the banking system. Depositors suffered no losses from bank failures, though the financial unrest aggravated the depression. The Swedish economy made a rapid recovery, starting in 1933. In 1934 real income grew by almost 7 per cent and industrial production by more than 19 per cent. The boom continued until the outbreak of World War II.

The Swedish economy fared better than the Finnish in terms of the cost of the crisis and also in terms of the average loss per crisis year. Real income started to decline in 1931 and returned to trend in 1933, making the cumulative loss 17.7 percentage points. Industrial production was depressed a year longer than real income. Between 1930 and 1933 the

cumulative loss was 30.9 percentage points. Loss of employment was recorded for three years, amounting to a total loss of 10.9 percentage points.

4.5. The crisis of the 1990s

The early 1990s were turbulent years. The iron curtain came down, the Soviet empire imploded and the Gulf War erupted. The industrial world entered a recession, triggered by rising oil prices and rising real interest rates in Europe due to the re-unification of Germany. The Bundesbank responded to the expansionary fiscal policy in Germany by increasing its interest rate. In autumn 1992 and summer 1993, the recession culminated in Europe with the ERM crisis.

The Finnish economy grew throughout the 1980s after recovering from the OPEC crises of the 1970s and early 1980s. However, signs of an overheated economy began to show in the latter part of the 1980s when real income growth accelerated, asset prices rose rapidly and inflation rates started to increase. The boom was fuelled by the deregulation of financial markets. Bank credit rose sharply and Finland received large capital inflows. The terms of trade increased owing to the fall of energy prices and the increase in prices in the forestry sector, a most important Finnish export industry. Fiscal policies were expansionary as well, thus contributing to the bubble (Honkapohja and Koskela (2001, pp. 56-60)).

The boom in Finland ended in 1990. A switch to tighter policies to defend the fixed exchange rate of the markka along with rising international interest rates led to a sharp increase in the real rate of interest. Asset prices plummeted and a period of debt deflation set in (Jonung et al. (2005)). A financial crisis erupted. Exports weakened further as a result of the collapse of trade with the imploding Soviet Union in 1991. The markka came under severe pressure as the depression grew deeper. In November 1991, the government enforced a devaluation of the currency (Pekkarinen and Vartiainen (2001, p. 332)). In September 1992, the peg became unsustainable and the Bank of Finland had to let the markka float.

The depreciation of the Finnish currency started the turnaround in 1993. The recovery was export-led while the domestic sector remained depressed for a few years longer (Honkapohja and Koskela (2001, p. 65)). During the remainder of the 1990s the economy grew rapidly and new industries emerged. The structure of the economy changed fundamentally. The old

forestry and engineering industries became less important while high-tech sectors such as the mobile phones industry dominated the recovery process (Kalela et al. (2001, p. 8)).

The Finnish economy started to decline in 1990 and real income did not return to its pre-crisis trend until 1994, with a cumulative loss of real income of 26.4 percentage points. Industrial production was somewhat less affected by the crisis than the rest of the economy, with a loss of 21.4 percentage points during 1990-92. Employment declined by the same proportion but over a longer period. Between 1990 and 1994 the cumulative loss of employment was 24.0 percentage points (Table 1).

The Swedish economy followed roughly the same path as the Finnish. In Sweden the credit market was deregulated in 1985, leading to a rapid increase in the demand for and supply of credit. High inflation rates and inflationary expectations combined with the design of the tax system gave rise to very low real interest rates, often negative ones. The result was a “financial hothouse” with sharply increasing asset prices (Jonung and Stymne (1997)).

In 1990, the introduction of a tax reform combined with higher international interest rates and falling inflation created a sharp and sudden increase in the real rate of interest, bursting the bubble and setting off a process of balance sheet adjustment with strong signs of debt deflation. The financial sector was put under severe stress and Sweden was soon plagued by a banking crisis and a currency crisis at the same time. The depression led to a sharp increase in unemployment. Government expenditures increased while tax revenues stagnated, leading to huge budget deficits. The Riksbank was eventually forced to let the krona float in November 1992. As a result of the consequent depreciation and lowering of interest rates, an export-led recovery slowly took hold.

The Swedish economy was hard hit by the crisis of the 1990s. It was one of the most severe downturns in the 20th century (Table 1). Still, Sweden was less affected than Finland by the real effects of the crisis. Between 1990 and 1993 the loss of real income was 13.0 percentage points and of industrial production 17.0. Employment continued to decline for a year longer than the two other measures. Between 1990 and 1994 job losses totalled 16.6 percentage points.

4.6. The OPEC crises

The 1970s saw the end of the fairly stable economic environment that had existed in the industrialised world after World War II. The Bretton Woods-system broke down, inflation and unemployment rose and the world economy was hit by two severe oil price shocks known as the OPEC crises or OPEC I and OPEC II.

In Finland inflation increased sharply in 1975 and the economy slowed down. Though no significant decline in real income was recorded, growth came to a halt in 1976-77 and industrial production fell (Heikkinen and Kuusterä (2001, p. 37)). Economic policies were made anti-inflationary. Bilateral trade with the Soviet Union, from where Finland imported a great deal of oil, softened the recession. As the cost of oil increased, so did Finnish exports to the Soviet Union (Hjerpe (1989, p. 50)).

The recovery of the Finnish economy was facilitated by the devaluations of the markka in 1977 and 1978. Real wages also declined during 1977-78 and 1980-81 due to modest nominal increases and high inflation rates (Heikkinen and Kuusterä (2001, p. 39)). Real income growth increased strongly in 1979 and remained high during the second oil price shock.

In Sweden, full employment emerged as the main policy goal for monetary and fiscal policies during the early 1970s. Hence, as oil prices rose sharply during 1973-74, an expansionary fiscal policy was adopted in an attempt to “bridge over” the expected recession. As a result, prices and wage costs increased faster domestically than internationally. To compensate for the worsening terms of trade, fiscal policy was made still expansionary. However, the recession was held off for a short time. Industrial production declined in 1975 and, notwithstanding a short recovery in 1976, continued to decline in 1977-78. Real income was not as affected as industrial production. It fell only in 1977.

In 1977 the incompatibility of expansionary domestic policies and the fixed exchange rate of the krona became evident. The krona was devalued in two steps in 1977. During the remainder of the 1970s the government adopted a tight fiscal policy and the economy started to recover.

As oil prices began to rise again during the autumn of 1979, the Swedish economy slumped into a recession. Once again, industrial production was worse hit than the rest of the economy. Real income in fact continued to grow, except in 1981. Belief in expansionary fiscal policies had disappeared as a result of the experience in OPEC I. Now more focus was put on monetary policy. Two pre-emptive devaluations were carried out during 1981-82. These, in combination with the international economic recovery, ended the OPEC II crisis and laid the foundation for the boom of the 1980s. Eventually this boom turned into a bust in the early 1990s.

Though the costs of the OPEC crises are lower than those of the other crises examined here, substantial losses were recorded in both countries. In Finland during OPEC I, the real income loss amounted to 17.8 percentage points, loss of industrial production to 27.7, and the loss of employment to 6.1 percentage points. All these losses occurred in 1975-78. As mentioned above, the second oil price shock later in the decade did not give rise to any notable decline in economic activity in Finland.

In Sweden, the OPEC I crisis resulted in a 9.9 percentage point loss of real income during 1976-78. Industrial production started to decrease a year earlier. By the end of the crisis the production loss was 13.5 percentage points. The policy goal of full employment seems to have been successful: the employment loss was modest.

The OPEC II crisis was milder than OPEC I in terms of the loss of real income, which totalled only 1.9 percentage points. Industrial production also fared better during OPEC II. Total loss of industrial production was 5.3 percentage points, after which growth rates returned to their pre-crisis trend in 1982. Once again employment did not suffer as much, with a loss in employment of only 1.9 percentage points in 1981-83.

4.7. World War I and II

Wars are not commonly analysed as periods of economic crisis. However, the disturbances and reallocations in Finland and Sweden associated with the world wars gave rise to the strongest negative impulses that have hit economic life in the two countries over the last century.

In Finland one immediate negative effect of the outbreak of war in 1914 was the closing of the important export markets in the West. This was somewhat alleviated by an increase in Russian demand for Finnish products, in particular for industries producing war material. Fortification works in southern Finland by the Russian army kept Finnish employment high. Finnish real income fell in both 1914 and 1915 (Heikkinen and Kuusterä (2001, p. 30)). Furthermore, Finland, at that time a grand duchy in the Russian Empire, was forced to accept roubles in return for its exports to Russia at an overvalued rate. This, exacerbated by the fact that Finland had left the gold standard at the beginning of the war, sparked an inflationary trend, followed by a speculative boom (Haavisto and Jonung (1995) and Herrala (1999, p. 11)).

In 1917, when Russia imploded, exports came to an end and Finland plunged into the worst recession of the period under study. The civil war, which broke out at the beginning of 1918, made matters worse. Peace brought a rapid recovery, with national income growing by more than 35 per cent in 1919-20 – a performance that has been attributed to the undervalued currency and the fact that Finnish export firms cooperated rather than competed with each other (Heikkinen and Kuusterä (2001, p. 31-32)).

Finland was drawn into World War II when the country was attacked by the Soviet Union late in 1939. GDP fell in both 1939 and 1940, but growth then remained positive until the end of the war, largely because financial stability was maintained, which was not the case during WW I (Herrala (1999, p. 19)).

Sweden, like many countries, left the gold standard at the outbreak of war in August 1914 and adopted a paper standard. Though Sweden was not one of the belligerents, the war affected the Swedish economy strongly. Monetary policy became expansionary, driving up the rate of inflation during all the years of the war. At an early stage, quantitative restrictions on foreign trade were introduced, especially on exports of foodstuffs (Larsson (1991, p. 68)). During the first years of the war, demand for Swedish exports was high and the current account showed large surpluses, sparking a speculative boom. In 1918 the stock market set a volume record that was not to be broken until 1980 (Lindgren (1993, p. 253)).

When Germany unleashed its unrestricted U-boat warfare, foreign trade became increasingly difficult, leading to falling industrial production and real income during 1917 (Larsson (1991,

p. 69)). A crop failure in 1918 brought the country to the brink of famine and led to severe political unrest. The armistice in November 1918 opened up foreign trade, setting off a post-war boom with rising industrial production and real income in 1919.

The government played a more active role during World War II than it did in World War I. Extensive regulations of financial markets, the housing market and product markets were imposed at an early stage. World War II affected the Swedish economy strongly. Real income fell substantially during the first years of the war. During World War I Germany was able to pay for its imports from Sweden by selling its Swedish assets. These were depleted long before the outbreak of World War II, during which Sweden consequently faced a smaller demand for its exports (Schön (2000, p. 359)).

Given Finland's direct involvement in the two wars, it is not surprising that its economic losses were much larger than Sweden's. Real income declined throughout World War I. Notwithstanding the short recovery in 1916, the economy did not return to its pre-war trend until 1919. The loss amounted to 57.8 percentage points. Industrial production was even worse off, with a staggering loss of 98.6 percentage points, most of which occurred during the latter part of the war. Employment, though depressed during the war, fared better, probably owing to the demand for manpower in the war industries. Total loss of employment amounted to 11.0 percentage points.

The Swedish economy was better off in the early part of World War I. Except for a short downturn in 1914, the economy grew rapidly until 1917, when a sharp depression began. The loss of real income between 1917 and 1919 was 21.2 percentage points and the loss of industrial production 40.9 percentage points. In spite of this decline, employment remained high, the loss amounting to a 1.0 percentage point.

World War II gave rise to smaller economic losses than World War I in Finland. Its real income loss was 32.4 percentage points between 1939 and 1942 compared to the pre-war trend, and the loss of industrial production was 72.2 percentage points between 1940 and 1942. For employment, by contrast, no loss is recorded, though employment rates did fluctuate markedly. In Sweden the loss of real income was almost as dramatic as during World War I, at 25.6 percentage points between the years 1940 and 1945. Industrial

production lost 36.6 percentage points. Employment also declined, causing a loss of 10.3 percentage points at the beginning of the war, between 1940 and 1941.

4.8. Summary

Finland and Sweden are economically alike in many ways. They are small, open economies with similar industrial structures, heavily dependent on international trade. They border each other geographically. For these reasons it is not surprising that economic crises have occurred at roughly the same times during the last 130 years. Sweden has been more prone to crisis, having had three deep crises more than Finland – those of 1907-08, the 1920s and OPEC II. In the deep crises common to both countries, Finland has, however, suffered greater losses in terms of real income, industrial production and employment. Measured in this way, Sweden has the better record.

It is outside the scope of this study to explain why real income, industrial production and employment evolved as they did during the various crises. However, we can give the arithmetical reasons for the difference in losses between the two countries. The larger losses in Finland are due to longer crisis periods below trend than in Sweden rather than in larger absolute percentage declines in the time series. The reasons for this are twofold. Firstly, during all crisis periods examined here except World War I, the Finnish pre-crisis trends have been higher than the Swedish trends. Secondly, the Finnish recoveries have been slower than the Swedish ones.

5. The international pattern

Bordo et al. (2001) calculate the average losses of real income during crises across 21 countries during four different periods: the classical gold standard, the inter-war period, the Bretton Woods period and the post-Bretton Woods period as displayed in Table 2. It shows the average for all countries as well as for industrial countries. As neither Finland nor Sweden experienced any major crisis during the Bretton Woods period, data from this period are omitted from Table 2. Industrial countries have smaller average losses during crises than all countries combined – both industrial and emerging economies. Also, during the inter-war years, commonly regarded as an unstable period, crises resulted in larger losses than during

the other periods. The standard deviations are large, however, suggesting that the severity of the crises in the sample has varied considerably.

Since the international averages for output losses in Table 2 are calculated using the same method as in Table 1, it is possible to compare them with the losses for Finland and Sweden. However, caution should be exercised when comparing the size of the losses in Table 2 as Bordo et al. (2001) examine currency and banking crises. These crises are not always associated with large output losses. Sometimes they may not even have had any significant real effects. As our calculations cover only the most severe crises in Finland and Sweden, excluding crisis episodes included in the international sample, we should expect the losses for the two Nordic countries to be larger than the international averages. This is also the picture that emerges in Table 2.

Finland experienced much larger losses than the international average during each of the three historical periods examined in Table 2. They are about 2-3 times larger for Finland. However, Finland was hit by only one major crisis during the first two periods and two during the last one. The Great Depression of the 1930s resulted in a numerical loss almost twice the size of the international average for that period. For the post-Bretton Woods period the Finnish loss is about three times the average for all countries.

As demonstrated in Table 1, Sweden displays considerably smaller output losses than Finland. Still, they are larger than average for the industrial countries as well as for all countries in Table 2. The international output loss is larger for the interwar period than for the two other periods. This holds for Sweden as well, while the Finnish losses are roughly the same across all three periods displayed in Table 2.⁸

⁸ Claessens et al. (2004, Appendix Table 2) report an output loss for the Finnish crisis of 1991-94 of 21.0 per cent of GDP. This is not far from the 26.4 per cent reported for Finland in Table 1. Similarly for Sweden, Claessens et al. (2004, Appendix Table 2) estimate the output loss to be 11.0 while our calculations in Table 1 amount to 13.0 per cent of GDP.

6. How costly was the crisis of the 1990s?

Judging from the calculations presented here and summarized in Chart 8, the crisis of the 1990s in Finland and Sweden was costly in terms of output, industrial production and employment foregone compared to the record of all major crises during the past 130 years.

In Finland, the loss in real income in the 1990s was the largest of any peacetime crisis. In Sweden, only the crisis of the 1930s caused a larger loss in real income than the crisis of the 1990s. These income losses were not so much an effect of falling industrial output, but rather of exceptionally large declines in other sectors of the economy. Loss of industrial output remained moderate in both countries compared to the other major crises. Employment in the two countries, however, was particularly hard hit during the 1990s. The cumulative employment loss is the greatest on record, much higher than during the Great Depression of the 1930s.

The impact of the two oil crises was quite different. OPEC I stands out as a crisis in both countries, though deeper in Finland than in Sweden. OPEC II, on the other hand, did not create a crisis in Finland, and caused only minor losses in Sweden. This is most probably because policy-makers learnt from OPEC I how to handle OPEC II. According to our estimates, the two World Wars stand out as the most costly of all the episodes examined. As could be expected, Finland suffered more, as it was involved directly in the wars.

The crisis in Finland and Sweden in the 1990s is a unique episode. It was unusually deep and prolonged. It occurred after a long period of peacetime prosperity and growth, so long that policy-makers and the public thought that a deep depression could not happen again. It is probably partly because the crisis came as a surprise that it turned so costly.

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Employment: 1876-1950: Johansson (1967), 1950-1963: Henrekson (1996), 1963-1996: SCB: nationalräkenskaperna.

Number of bankruptcies: 1871-1996: *Statistisk årsbok*, SCB, various issues.

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Appendix. The cost of crisis calculated with alternative trends

The estimates of the cost of crisis (the loss of real income, of industrial production and of employment) depend on the definition of the trend rate of growth. The estimates reported above are based on the use of a five-year trend. Here we re-calculate the cost of crisis using three alternative trend rates:

1. The average growth rate four years prior to the outbreak of the crisis.
2. The average growth rate for the whole period studied, that is for 1871-1996.
3. The average growth rate for the monetary regime during which the crisis occurred: for the classical gold standard 1873-1913, the inter-war period 1919-38, and the post-Bretton Woods period 1972-96.

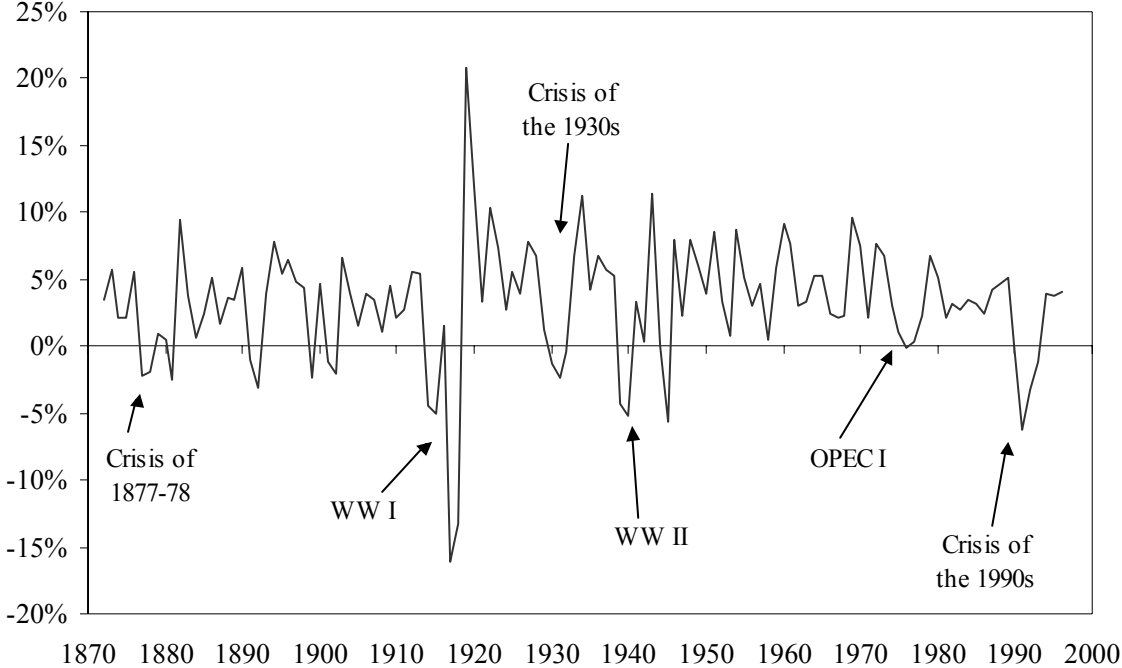
The results are presented in Table 3 and 4. The use of different trends changes the magnitude of the cost of crisis somewhat. However, as we are interested in comparing the crisis of the 1990s to other crises, the absolute magnitudes are of less importance. We are interested in the relationship between the losses estimated for the different crises.

The relative severity of the crisis of the 1990 stands out as fairly stable in Table 3 and 4. The losses of real income in both Finland and Sweden are the largest or second largest during peacetime crises, irrespective of the trend rate adopted. The loss of employment is also the largest regardless of the definition of the trend. For Finland, the loss of industrial production remains fairly moderate whereas for Sweden, the use of the trend for the whole period makes the loss the largest of all peacetime crises.

The length of the crises remains fairly stable as well, in particular for the crisis of the 1990s. No change in duration is necessary in any of the calculations. Some of the durations of the other crises change a year but this does not alter the perception of the crisis of the 1990s as a particularly long one.

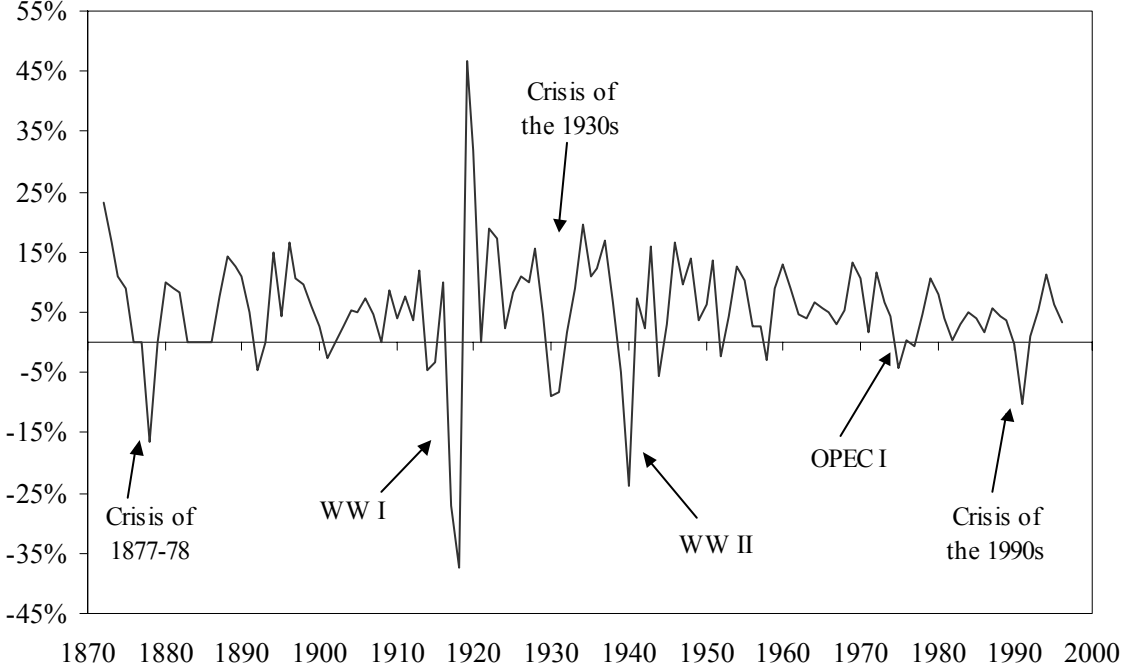
To sum up, our basic conclusions remain robust to the adoption of different trend rates.

Chart 1 Real income 1872-1996 in Finland. Annual percentage change



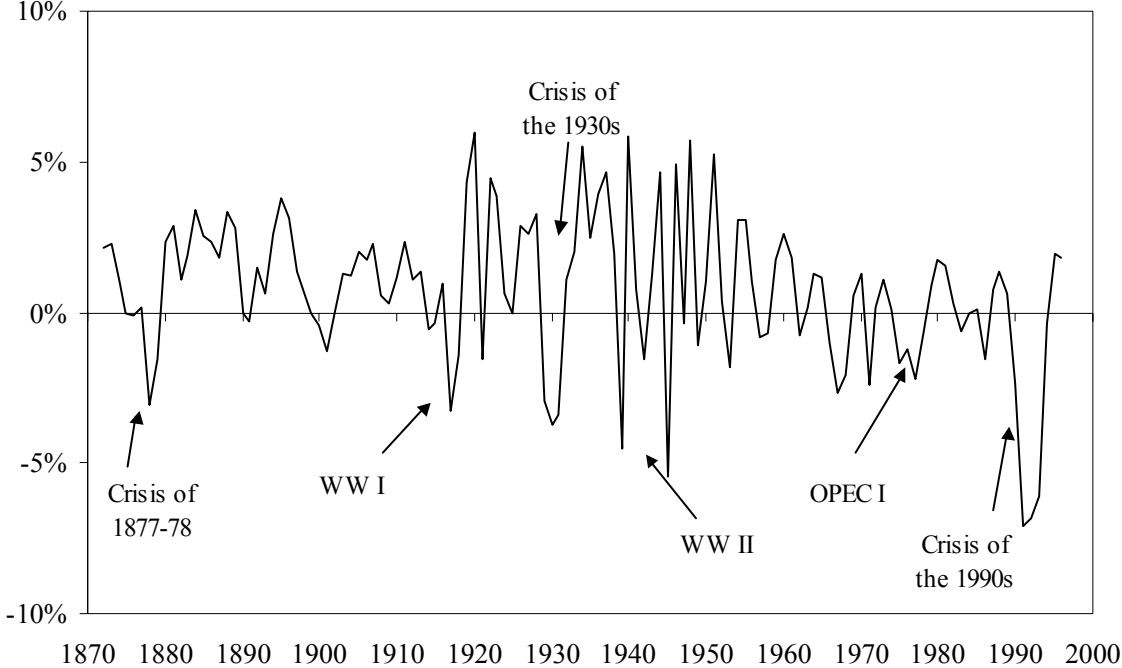
Sources: See statistical sources.

Chart 2 Industrial production 1872- 1996 in Finland. Annual percentage change



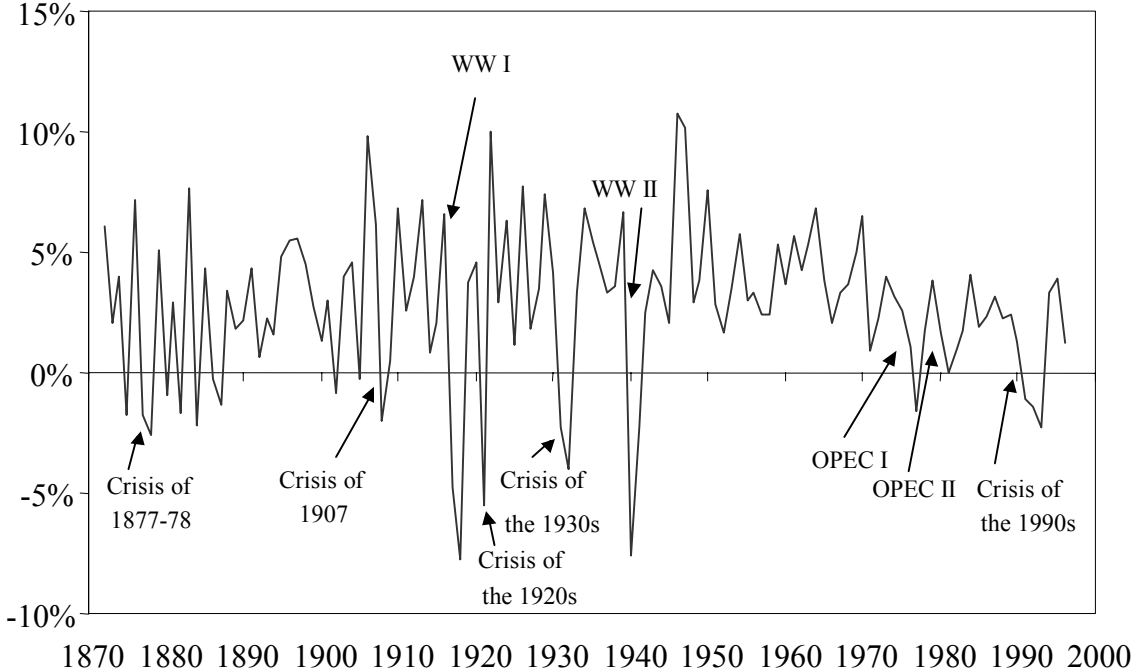
Sources: See statistical sources.

Chart 3 Employment 1872-1996 in Finland. Annual percentage change



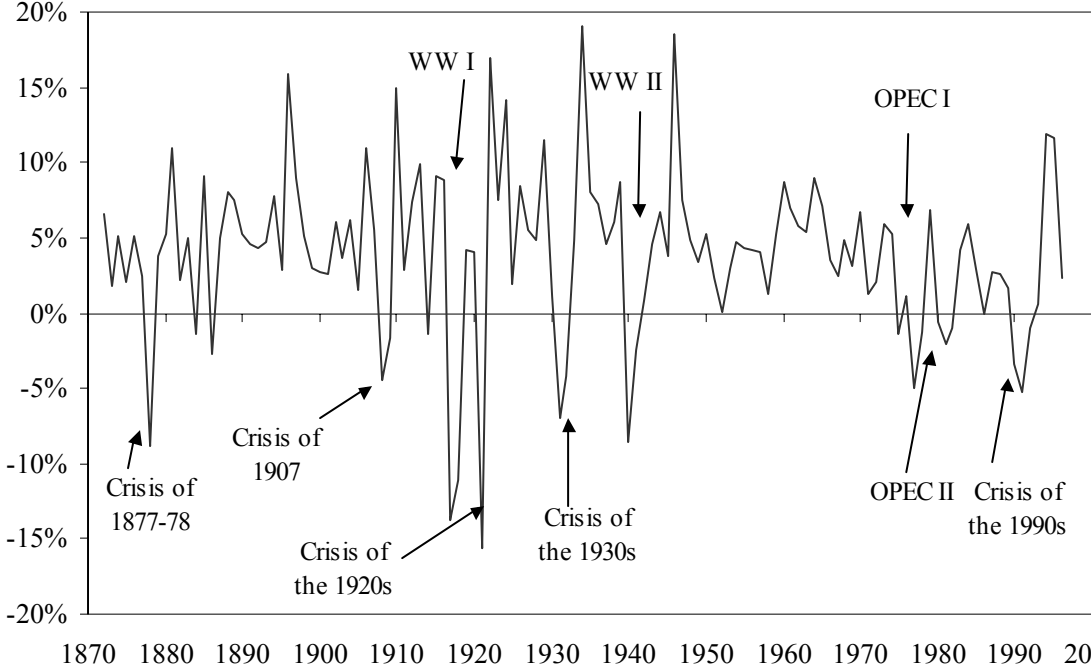
Sources: See statistical sources.

Chart 4 Real income in Sweden 1872-1996. Annual percentage change



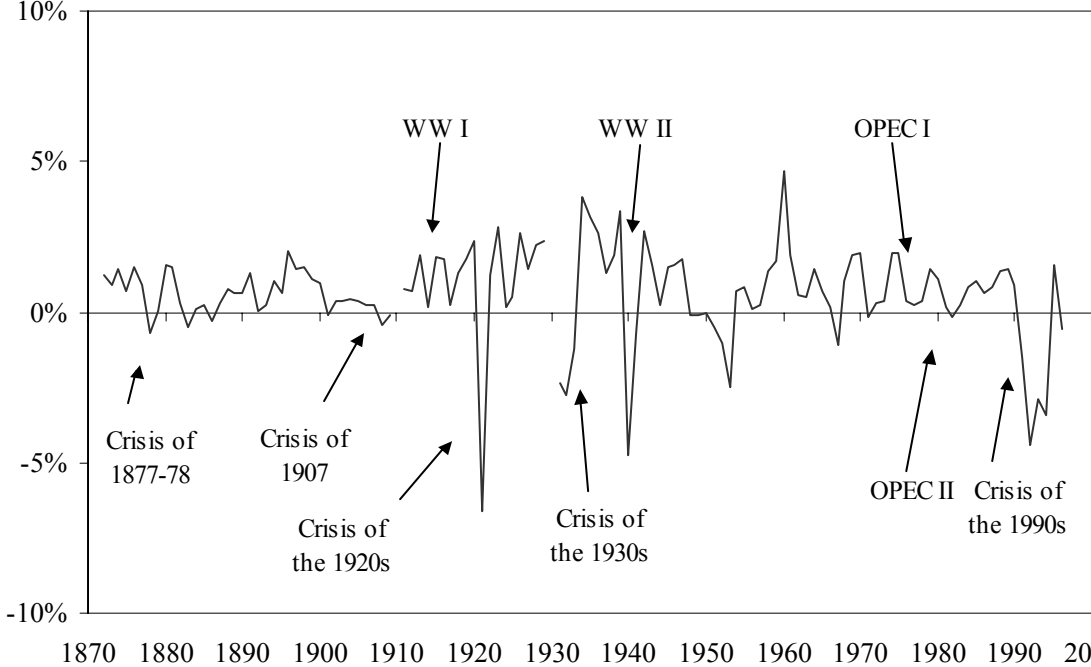
Sources: See statistical sources.

Chart 5 Industrial production 1872-1996 in Sweden. Annual percentage change



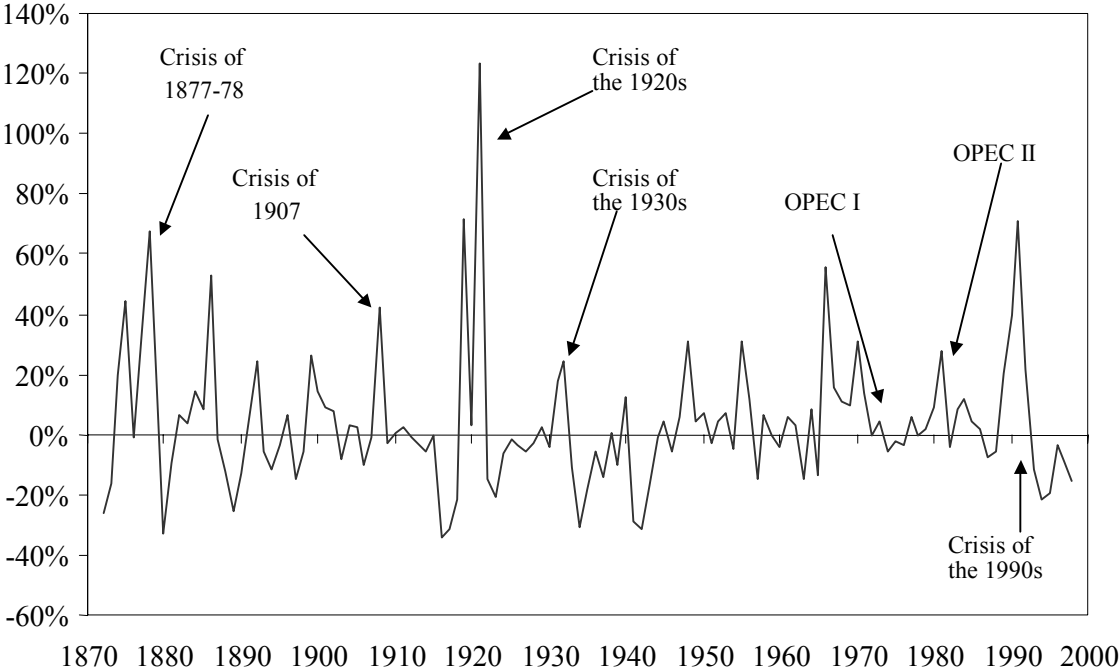
Sources: See statistical sources.

Chart 6 Employment 1872-1996 in Sweden. Annual percentage change



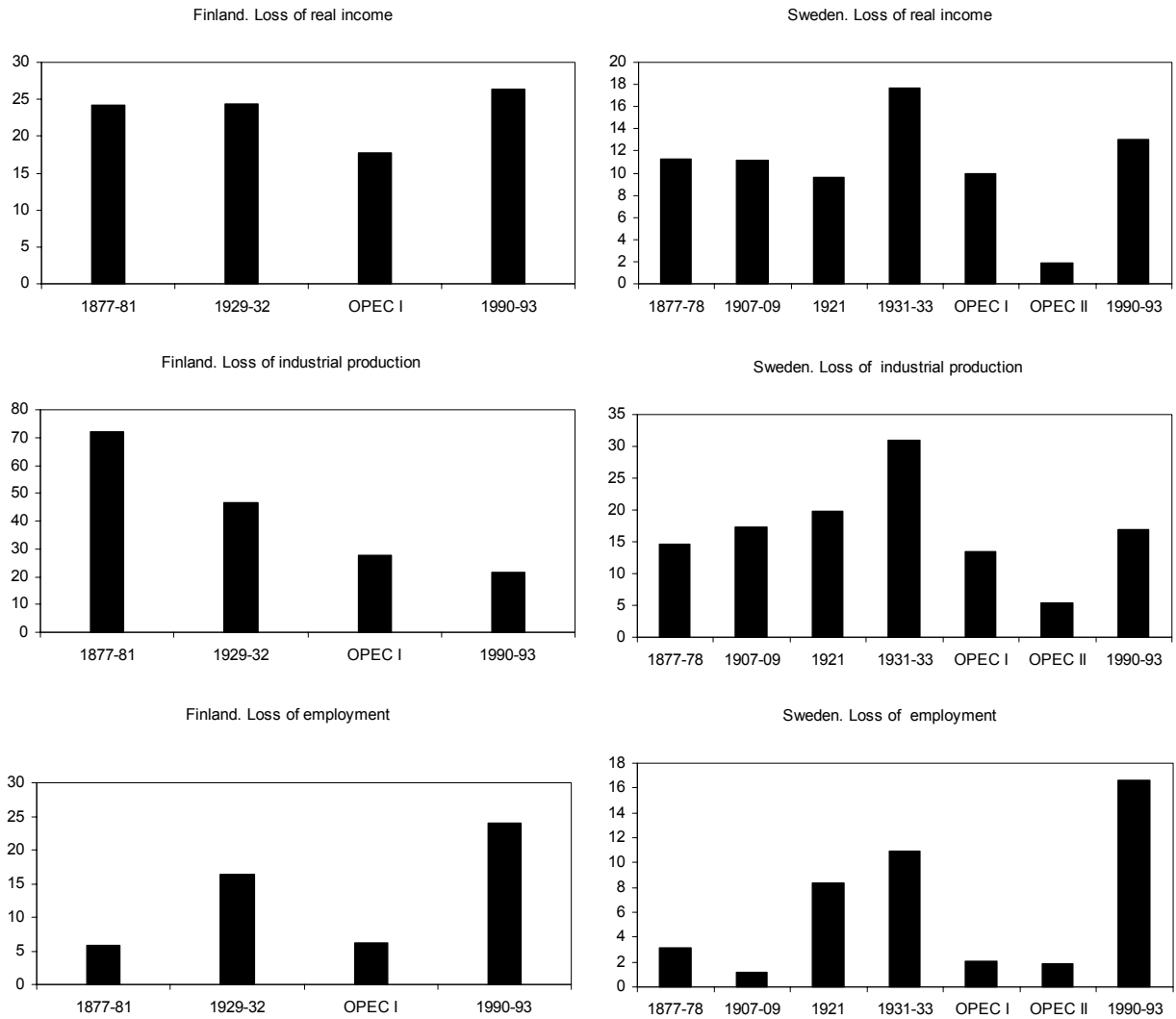
Sources: See statistical sources.

Chart 7 Number of bankruptcies 1871-1998 in Sweden. Annual percentage change



Sources: See statistical sources.

Chart 8 Loss of real income, industrial production and employment during the deepest crises in Finland and Sweden. Percentage points



Sources: Table 1.

Table 1 The costs of Finland's and Sweden's most severe crises in terms of foregone growth in real income, industrial production and employment relative to a 5-year trend (percentage points)

| Crisis of: | 1877-78 | 1907 | 1920s* | 1930s | 1990s | OPEC I | OPEC II | WWI | WWII |
|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1. Loss of real income | | | | | | | | | |
| Finland | 24.2 | no crisis | no crisis | 24.3 | 26.4 | 17.8 | no crisis | 57.8 | 32.4 |
| <i>Period below trend</i> | <i>1877-81</i> | - | - | <i>1929-32</i> | <i>1990-93</i> | <i>1975-78</i> | - | <i>1914-18</i> | <i>1939-42</i> |
| <i>Average loss per crisis year</i> | <i>4.8</i> | - | - | <i>6.1</i> | <i>6.6</i> | <i>4.5</i> | - | <i>11.6</i> | <i>8.1</i> |
| Sweden | 11.3 | 11.2 | 9.6 | 17.7 | 13.0 | 9.9 | 1.9 | 21.2 | 25.6 |
| <i>Period below trend</i> | <i>1877-78</i> | <i>1908-09</i> | <i>1921</i> | <i>1931-33</i> | <i>1990-93</i> | <i>1976-78</i> | <i>1980-82</i> | <i>1917-19</i> | <i>1940-45</i> |
| <i>Average loss per crisis year</i> | <i>5.7</i> | <i>5.6</i> | <i>9.6</i> | <i>5.9</i> | <i>3.3</i> | <i>3.3</i> | <i>.6</i> | <i>7.1</i> | <i>4.3</i> |
| 2. Loss of industrial production | | | | | | | | | |
| Finland | 72.2 | no crisis | no crisis | 46.4 | 21.4 | 27.7 | no crisis | 98.6 | 72.2 |
| <i>Period below trend</i> | <i>1876-79</i> | - | - | <i>1930-33</i> | <i>1990-92</i> | <i>1975-78</i> | - | <i>1914-18</i> | <i>1939-42</i> |
| <i>Average loss per crisis year</i> | <i>18.1</i> | - | - | <i>11.6</i> | <i>7.1</i> | <i>6.9</i> | - | <i>19.7</i> | <i>18.1</i> |
| Sweden | 14.7 | 17.3 | 19.8 | 30.9 | 17.0 | 13.5 | 5.3 | 40.9 | 36.6 |
| <i>Period below trend</i> | <i>1877-78</i> | <i>1908-09</i> | <i>1921</i> | <i>1930-33</i> | <i>1990-93</i> | <i>1976-78</i> | <i>1980-82</i> | <i>1917-19</i> | <i>1940-45</i> |
| <i>Average loss per crisis year</i> | <i>7.4</i> | <i>8.7</i> | <i>19.8</i> | <i>7.7</i> | <i>4.3</i> | <i>4.5</i> | <i>1.8</i> | <i>13.6</i> | <i>6.1</i> |
| 3. Loss of employment | | | | | | | | | |
| Finland | 5.9 | no crisis | no crisis | 16.4 | 24.0 | 6.1 | no crisis | 11.0 | no loss |
| <i>Period below trend</i> | <i>1878-79</i> | - | - | <i>1929-32</i> | <i>1990-94</i> | <i>1975-78</i> | - | <i>1914-18</i> | - |
| <i>Average loss per crisis year</i> | <i>3.0</i> | - | - | <i>4.1</i> | <i>4.8</i> | <i>1.5</i> | - | <i>2.4</i> | - |
| Sweden | 3.1 | 1.2 | 8.4 | 10.9 | 16.6 | 2.1 | 1.9 | 1.0 | 10.3 |
| <i>Period below trend</i> | <i>1877-79</i> | <i>1908-09</i> | <i>1921-22</i> | <i>1931-33</i> | <i>1990-94</i> | <i>1976-78</i> | <i>1981-83</i> | <i>1917-18</i> | <i>1940-41</i> |
| <i>Average loss per crisis year</i> | <i>1.0</i> | <i>.6</i> | <i>4.8</i> | <i>3.6</i> | <i>3.3</i> | <i>.7</i> | <i>.6</i> | <i>.5</i> | <i>5.2</i> |

Comments: The costs are calculated by summing the differences between the trend growth rate and actual growth rate between the first year of recession until growth returns to trend.

*A two-year trend (for 1919-20) is used to calculate the loss of real income and industrial production during the crisis of the 1920s in Sweden.

Table 2 International losses of real income growth during crises

| Average for | The classical gold standard | Interwar period | Post-Bretton Woods period |
|---------------------------|------------------------------------|------------------------|----------------------------------|
| All countries | 7.8 | 13.4 | 7.8 |
| <i>Standard deviation</i> | <i>12.8</i> | <i>15.0</i> | <i>9.1</i> |
| Industrial countries | 7.7 | 12.3 | 6.7 |
| <i>Standard deviation</i> | <i>6.8</i> | <i>14.7</i> | <i>9.0</i> |
| Finland | 24.2 | 24.3 | 22.1 |
| Sweden | 11.3 | 15.4 | 8.2 |

Comments: The international record covers 21 countries. See Bordo et al. (2001).

Sources: The losses for all countries and industrial countries are taken from Bordo et al. (2001) and for Finland and Sweden from Table 1.

Table 3 Alternative calculations of the costs of the most severe crises in Finland (percentage points)

| Crisis of: | 1877-78 | 1930s | 1990s | OPEC I | WWI | WWII |
|---|----------------|----------------|----------------|----------------|----------------|----------------|
| <u>1. Loss of real income</u> | | | | | | |
| 4-year trend | 24.7 | 27.0 | 27.3 | 15.7 | 57.3 | 27.8 |
| <i>Period below trend</i> | <i>1877-81</i> | <i>1929-32</i> | <i>1990-93</i> | <i>1975-78</i> | <i>1914-18</i> | <i>1939-42</i> |
| All years | 20.9 | 15.5 | 23.3 | 8.8 | 53.1 | 15.8 |
| <i>Period below trend</i> | <i>1877-81</i> | <i>1929-32</i> | <i>1990-93</i> | <i>1975-78</i> | <i>1914-18</i> | <i>1939-40</i> |
| The monetary regime | 18.4 | 26.4 | 21.1 | 6.7 | - | - |
| <i>Period below trend</i> | <i>1877-81</i> | <i>1929-32</i> | <i>1990-93</i> | <i>1976-77</i> | - | - |
| <u>2. Loss of industrial production</u> | | | | | | |
| 4-year trend | 76.5 | 47.9 | 21.4 | 15.7 | 96.8 | 65.9 |
| <i>Period below trend</i> | <i>1876-79</i> | <i>1930-33</i> | <i>1990-92</i> | <i>1975-78</i> | <i>1914-18</i> | <i>1939-42</i> |
| All years | 38.1 | 31.5 | 25.7 | 21.3 | 89.4 | 15.8 |
| <i>Period below trend</i> | <i>1876-79</i> | <i>1930-32</i> | <i>1990-92</i> | <i>1975-78</i> | <i>1914-18</i> | <i>1939-40</i> |
| The monetary regime | 36.9 | 51.9 | 20.4 | 15.3 | - | - |
| <i>Period below trend</i> | <i>1876-79</i> | <i>1930-33</i> | <i>1990-92</i> | <i>1975-77</i> | - | - |
| <u>3. Loss of employment</u> | | | | | | |
| 4-year trend | 5.1 | 19.7 | 24.2 | negative trend | 12.2 | no loss |
| <i>Period below trend</i> | <i>1878-79</i> | <i>1929-33</i> | <i>1990-94</i> | - | <i>1914-18</i> | - |
| All years | 6.1 | 12.2 | 26.3 | 8.7 | 8.3 | no loss |
| <i>Period below trend</i> | <i>1878-79</i> | <i>1929-31</i> | <i>1990-94</i> | <i>1975-78</i> | <i>1914-18</i> | - |
| The monetary regime | 7.0 | 16.6 | negative trend | negative trend | - | - |
| <i>Period below trend</i> | <i>1878-79</i> | <i>1929-32</i> | <i>1990-94</i> | - | - | - |

Comments: The costs are calculated by summing the differences between the trend growth rate and actual growth rate between the first year of recession until the growth of the series returns to trend.

Table 4 Alternative calculations of the costs of the most severe crises in Sweden (percentage points)

| Crisis of: | 1877-78 | 1907 | 1920s | 1930s | 1990s | OPEC I | OPEC II | WWI | WWII |
|---|----------------|----------------|-------------|----------------|----------------|----------------|----------------|----------------|----------------|
| <u>1. Loss of real income</u> | | | | | | | | | |
| 4-year trend | 10.1 | 11.6 | - | 15.6 | 13.5 | 7.8 | 1.1 | 21.3 | 21.0 |
| <i>Period below trend</i> | <i>1877-78</i> | <i>1908-09</i> | <i>-</i> | <i>1931-33</i> | <i>1990-93</i> | <i>1976-78</i> | <i>1980-82</i> | <i>1917-19</i> | <i>1940-42</i> |
| All years | 9.9 | 7.0 | 8.3 | 11.8 | 14.5 | 7.1 | 6.7 | 18.0 | 15.7 |
| <i>Period below trend</i> | <i>1877-78</i> | <i>1908-09</i> | <i>1921</i> | <i>1931-32</i> | <i>1990-93</i> | <i>1976-78</i> | <i>1980-83</i> | <i>1917-18</i> | <i>1940-42</i> |
| The monetary regime | 9.5 | 6.6 | 8.9 | 13.2 | 10.2 | 4.0 | 2.5 | - | - |
| <i>Period below trend</i> | <i>1877-78</i> | <i>1908-09</i> | <i>1921</i> | <i>1931-33</i> | <i>1990-93</i> | <i>1976-77</i> | <i>1980-82</i> | <i>-</i> | <i>-</i> |
| <u>2. Loss of industrial production</u> | | | | | | | | | |
| 4-year trend | 13.5 | 18.2 | - | 35.5 | 16.2 | 14.0 | 4.9 | 40.5 | 30.1 |
| <i>Period below trend</i> | <i>1877-78</i> | <i>1908-09</i> | <i>-</i> | <i>1930-33</i> | <i>1990-93</i> | <i>1976-78</i> | <i>1980-82</i> | <i>1917-19</i> | <i>1940-42</i> |
| All years | 14.2 | 13.9 | 19.5 | 21.7 | 24.7 | 16.8 | 15.2 | 32.7 | 21.8 |
| <i>Period below trend</i> | <i>1877-78</i> | <i>1908-09</i> | <i>1921</i> | <i>1930-32</i> | <i>1990-93</i> | <i>1976-78</i> | <i>1980-82</i> | <i>1917-18</i> | <i>1940-42</i> |
| The monetary regime | 16.1 | 15.2 | 20.8 | 25.8 | 16.6 | 10.7 | 9.2 | - | - |
| <i>Period below trend</i> | <i>1877-79</i> | <i>1908-09</i> | <i>1921</i> | <i>1930-33</i> | <i>1990-93</i> | <i>1976-78</i> | <i>1980-82</i> | <i>-</i> | <i>-</i> |
| <u>3. Loss of employment</u> | | | | | | | | | |
| 4-year trend | 3.1 | 1.1 | - | 10.5 | 16.6 | 2.6 | 2.2 | 1.3 | 10.0 |
| <i>Period below trend</i> | <i>1877-79</i> | <i>1908-09</i> | <i>-</i> | <i>1931-33</i> | <i>1990-94</i> | <i>1976-78</i> | <i>1981-83</i> | <i>1917-18</i> | <i>1940-41</i> |
| All years | 1.5 | 1.7 | 7.2 | 8.2 | 14.3 | .9 | 1.6 | .3 | 4.5 |
| <i>Period below trend</i> | <i>1877-79</i> | <i>1908-09</i> | <i>1921</i> | <i>1931-33</i> | <i>1990-94</i> | <i>1976-78</i> | <i>1981-83</i> | <i>1917</i> | <i>1940-42</i> |
| The monetary regime | 1.5 | 1.7 | 7.5 | 9.1 | 12.1 | no loss | .4 | - | - |
| <i>Period below trend</i> | <i>1877-79</i> | <i>1908-09</i> | <i>1921</i> | <i>1931-33</i> | <i>1990-94</i> | <i>-</i> | <i>1981-82</i> | <i>-</i> | <i>-</i> |

Comments: The costs are calculated by summing the differences between the trend growth rate and actual growth rate between the first year of recession until the growth of the series returns to trend.