Capital Movements, Exchange Rates and Market Integration: The Baltic Area 1850-1913.*

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The industrialisation process from the mid 19th century up to the First World War was very much a European process with increasing interaction between the nations and regions of the continent. This increase in interaction was partly the result of the industrialisation process as such. Industrial growth in some areas led to strong shifts in the demand and supply functions that changed relative prices and served to widen markets. The increasing interaction was also the result of decisive measures undertaken to favour market integration. Liberalisation of trade and freedom of movements of both capital and people as well as the construction of modern communication networks meant a rapid globalisation of the world economy and certainly a strongly increased economic interaction within Europe. The integration of economies that within a very small area represented different levels of development as well as different institutions created much of the dynamics of growth in Europe.

The present article will give an analysis of interaction between economies in the Baltic area during the industrialisation process of the late 19th and early 20th centuries. It is based on research in projects that have constructed new series of Swedish economic development in the 19th and 20th centuries, which are analysed in relation to the behaviour of some other European economies, mainly Sweden in relation to Germany and Britain.[1] The analysis is mainly focussed on the integration of the capital market, with Sweden as one part and as a starting-point for the analysis.

The growth of factor markets

From the 1850s, when industrialisation accelerated, strong tensions arose within Europe. In areas that were in an early stage of industrialisation and had to develop a modern infrastructure simultaneously with the establishment of industries, a heavy demand for resources arose. Outlays for investments could of course have been financed locally or nationally by means of lowering consumption (through taxation, through inflation or by other means of redistributing income) but that would have incurred heavy social costs. In more advanced areas, on the other hand, income tended to rise faster than investment and

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[1] The studies mainly concern the capital market by Schön, e.g. (1997), the commodity market by Ljungberg, e.g. (1994) and the exchange rates and the money market by Lobell (2000).

consumption and, thus, savings increased. That was the case in industrially more developed areas and particularly in reformed agricultural areas. Commercial agricultural producers were favoured by the rising demand for food and raw material in industrial areas in the decades after 1850. Such regional differences certainly arose within each country, since there were old and new centres of industry as well as commercial and backward agricultural areas all over Europe, but they also arose on a European scale. Europe had a more developed kernel in the Northwest and a periphery stretching from the Iberian to the Scandinavian peninsulas.

The capital movements meant that large imbalances in trade between surplus and deficit regions and nations could exist for a very long time. New ties of debt, of long-term obligations, were knit across Europe. At the same time, these dynamics of industrial diffusion in Europe could be upheld with stable monetary institutions.

Capital flows interacted with the movement of labour. The main stream of course went from Europe to the Americas and the interaction between capital and labour flows has mainly been studied in the Atlantic economy of the Old and the New World. One aspect of this interaction is the timing of the flows with labour and capital going mainly to the US in decades of slackening European growth (i.e. the 1860s, the 1880s and 1900s). The timing of the factor mobility sustained a long-swing pattern that was counter-cyclical between the Old and the New World.[2] The timing thus contributed to *inter alia* a certain degree of stability in the world economy. Another aspect of the flows is the effect on the relative factor prices and their impact upon the economic structure. Through market integration relative abundance and relative scarcity of resources tended to be reduced. Thus, integration meant convergence of prices not only between regions but also within the structure of prices itself. The convergence in factor prices in the late 19th century tended to increase the degree of competitive trade, but it also created new conditions for growth and structural change. Rising income and innovations introduced new forces of divergence between regions and nations.

This paper will deal with these aspects in a European setting. It will hold that such convergence was strong in Northern Europe and that factor movements and swings occurred also within the pre-1914 European economy as an interaction between different parts of the European industrialisation process. The two aspects of convergence and swings are mainly approached from Swedish experiences in relation to some of the main European economies, notably Germany and Britain. The swings in the capital flows were part of investments cycles that transformed the industrial structure in the Baltic area in the decades prior to the First World War.

Factor movements and the convergence of factor prices

The second half of the 19th century witnessed a globalisation with far-reaching consequences. Basically, processes of market widening (such as globalisation) will have a systematic effect upon factor prices. Prices of relatively abundant factors in an economy will increase when they are confronted with more alternatives in economies where these factors are relatively scarce. Consequently, prices of relatively scarce factors will fall when confronted with new competitors. This equalisation of factor prices was part of the

[2] On the long swings, see Thomas (1954) and Abramovitz (1961).

Heckscher-Ohlin theorem that was based mainly upon experiences from the pre-1914 period of globalisation.

The effects of integration upon relative factor prices were most clearly expressed in the relation between Europe and the US. The relatively rich supply of both capital and labour in the old European economy met with new possibilities in the US, while the price of the relatively scarce resource of land was depressed due to the competition from the land-rich US. In the US relative price movements of course moved in the opposite direction. Wages grew at a slower rate than GDP. Trade and factor mobility thus led to a convergence of prices.

Table 1. Annual growth in indexes of real wages and in GDP per capita in European countries and the United States 1870-1910.

Country	Annual growth of real wages 1870-1910	Annual growth of GDP per capita 1870-1910
Sweden	2,8	1,7
Denmark and Norway	2,6	1,3
France, Germany and UK	1,1	1,2
USA	1,1	1,6
Italy, Portugal and Spain	0,6	1,0

Sources: Wages from Williamson (1995); GDP from Maddison (1995).

Within Europe convergence was much weaker, however. It has actually been argued that convergence within Europe was insignificant for the world economy.[3] As a matter of fact, there were parts of the European periphery that fell behind the leaders during the new surge if industrialisation in the late 19th century. Thus economies in Europe diverged even in an era of reduced transactions costs internationally. But there was convergence within the European economy as well. Convergence occurred between the old industrialised countries in north-western Europe and the new industrialising countries in Scandinavia. Convergence was particularly strong in the Swedish case.

In the Scandinavian countries growth of investment and production accelerated from the 1850s. This growth was accompanied by growing deficits in the foreign affairs. Reconstruction of the trade balances indicates that there were large capital imports to Scandinavia, particularly to the economically leading countries of Denmark and Sweden.[4]

[3] Hatton&Williamson (1994) p 23.

[4] Generally all Nordic countries had large deficits in the trade with goods but surplus in services due to the income of shipping. The Norwegian and Swedish trade balances are probably accurately computed, containing trade with both goods and services. (NOS XII:163 (1965); Schön (1989) The Danish export of services has been crudely estimated. Denmark's merchandise foreign trade is reported in Henriksen & Ölgaard (1960), to which has been added freight income as a proxy for trade in services. Hansen (1974) has an estimate of value added from shipping abroad, and to arrive at net receipts the whole series has been doubled and then reduced by 15 percent to allow for expenditures abroad. The result is certainly very stereotyped but it is a reasonable explanation for a part of the very substantial deficit in merchandise trade. See further Ljungberg/Schön, Domestic markets and international integration. Paths to industrialization in the Nordic countries, *Paper presented at the IV EHES conference, Oxford, 20-23 September 2001:*

FIGURE 1 ABOUT HERE

In the Scandinavian context, Denmark had an early lead in trade deficits that rose until a turning point in the late 1880s, when deficits began to diminish. Denmark was relatively early in the transformation of agriculture and in urbanisation that entailed huge investments. Part of the large Danish trade deficit was probably covered by revenues from the Sound toll and from an early strong position on the Nordic financial market. Capital imports, however, covered another part. The Scandinavian contrast to Denmark was Norway. The foreign affairs of Norway seem to have been balanced up to the 1890s. The Norwegian economy was specialised in fishing, shipping and commerce that did not attract large investments before 1890. There were even some capital exports from Norwegian merchants to, for instance, Swedish sawmill industry. From the 1890s, however, a more extensive Norwegian capital import started. The emergence of a modern electro-chemical industry in Norway from the 1890s was heavily dependent upon foreign capital. [5]

Sweden had a comprehensive and recurrent capital import from the 1850s until 1910. For Sweden a full estimate of the foreign debt – adding interest charges to the deficits in the trade balance - has been made. According to this estimate, the Swedish foreign debt was above 2/3 of GDP already around 1890, and grew slightly faster than GDP until the war.[6]

Concomitant with the capital inflow, there was mass emigration from Scandinavia. In a global perspective the Scandinavian and particularly the Swedish position could be described as a mixture of the Old and the New World. In relation to the US, Scandinavia had an abundant supply of labour and mass emigration followed. In that perspective, Scandinavia was part of the Old World. The relation to the old industrial countries in Europe was different, however. In that respect, Scandinavia and particularly Sweden were rich of some natural resources while capital was scarce. Thus capital flowed to Scandinavia as credits to develop her productive capacity.

These double flows in combination with economic growth had profound consequences particularly on Swedish relative prices. Relative capital/labour prices converged strongly between Sweden and the primary capital supplying economies of Britain, France and Germany. In the early stages of industrialisation, Swedish interest rates were comparatively high with only a short interval of sharply rising Continental rates in conjunction with the war between France and Germany 1870-71. Swedish rates fell however somewhat in the long term and then dropped down close to the European level at the outbreak of the First World War (and stayed low after the war). Swedish wages moved in the opposite direction. In the mid-19th century the wage level has been estimated to be only half the average of the wage levels of Britain, France and Germany in real terms. Relative wages in Sweden rose however particularly from the 1890s when modern

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[5] Hodne (1981).
[6] Schön (1989, 1990, 2000).

industrialisation accelerated in Sweden. By that time Sweden had become a country of comparatively high wages and low interest rates.

FIGURE 2 ABOUT HERE

Thus, Scandinavian countries and Sweden in particular could benefit from the globalisation and the European integration in the 19th century in order to achieve rapid economic growth. The Scandinavian industrialisation with emigration and capital imports is largely a success story. Their success makes up a contrast to, for instance, the experiences on the Iberian and Balkan peninsulas, where capital imports are held to result not in development but rather in dependence upon the creditors and in restrictions upon further growth.[7] Relative to the other peripheral economies in Europe Scandinavia and particularly Sweden enjoyed some advantages. One was an elastic demand for her export goods that could sustain a considerable import and attract foreign credit. But in the long run it was of greater importance that factor mobility was high within Sweden, so the economy could adjust to a changing situation. In the long run, the foreign demand for timber, iron and oats would stagnate, while at the same time new relative factor prices reduced Swedish advantage in such crude exports and raised the advantage in more refined manufacturing. While the Swedish economy had been complementary to the leading industrial countries at an early stage of industrialisation, it entered from the turn of century into a more competitive situation. Thus, the ability to undergo a profound structural transformation particularly from the 1890s and onwards was of utmost importance for long run growth.

The long swings and capital flows in Swedish industrialisation

It is very reasonable that a fast growing industrial region of Europe such as Sweden attracted a large volume of credits. Huge investments in infrastructure as well as in industry had to be undertaken in a rather poor and very sparsely populated country that could provide material resources to the industrially developed Europe. Capital imports has certainly been mentioned in accounts of the financing of Swedish industrialisation but only as a factor of secondary importance, far behind the growth of export income. New estimates show, however, that borrowing abroad was of greater importance than has hitherto been generally considered.[8] From the early 1850s up to the First World War Sweden had permanent deficits in her current accounts. Thus, for more than 60 years Sweden imported more goods and services (inclusive of interest payments on the debt) than she exported and her total foreign debt rose continuously. At the outbreak of the war, the foreign debt had risen to the proportion of more than 3/4 of GDP. Sweden belonged to the most indebted countries in the world at a per capita basis. One can even assume that the Swede on average was the most indebted of this time, although precise measurements are lacking for many countries.

[7] On differences in peripheral Europe, see e.g. Berend/Ranki (1982)
[8] Schön (1990). The estimation includes both public and private foreign debt.

As a consequence of the capital imports domestic savings rose much less than investments. While the ratio of domestic investments to GDP rose from somewhat below 5 per cent in the early 1850s to 10 per cent in the mid-1870s (a level attained more permanently in the 1890s), the rise in the Swedish savings ratio was much more modest. Up to the First World War, that ratio fluctuated around a level of some 6 percent. The really revolutionary changes in savings occurred during the inflationary war boom. While Swedish export goods could be sold at high prices primarily in Germany, domestic consumption was curtailed. After a short setback in the immediate post-war years a high level of savings was retained during the second half of the 1920s. Thus, thanks to international integration of the capital market, Sweden was able to postpone an increase in savings until investments in industrialisation had raised the income level.

The long swing pattern

The 1850s, 1870s and 1890s are well known as the decades of acceleration in Swedish industrialisation.[9] In each of these decades, investments increased rapidly with levels that approximately doubled in constant prices. During the following decades of the 1860s, 1880s and 1900s, investment levels were fairly stable. This timing of investments gives a pattern of cycles of 20 years, i.e. so called long swings. They were particularly pronounced in residential construction.

The same very marked feature of long swings is found in capital imports measured as the deficit in the current accounts. (Figure 3) Starting from low levels with nearly balanced accounts around 1850 and 1870 as well as in the early 1890s, capital imports grew and culminated in the middle of the following decades that at the end saw a quite sharp return to balance in the accounts.

Each of the long swings contains a time pattern between the macro variables of exports, investment, consumption and imports. The upswings of the long swings were initiated by accelerations in exports that led to rising income (and profits) and to increased investments in plants, infrastructure and housing. In the first years of upswing in the investment cycles capital imports (measured as deficits in the current accounts) were insignificant. These investments, however, increased demand for capital goods and labour, thus increasing domestic demand that competed with the export sector. Growth of exports decelerated but thanks to capital imports, internal demand was not immediately curbed through restrictive credit policies. Capital imports financed deficits in the current accounts that were of longer duration than the upswings in investments or in housing construction. The swings in capital imports peaked approximately 5-10 years after the boom in investments. In this latter phase of the investment cycle, capital imports reached a level corresponding to 50-75 per cent of total investments. Thus, while accelerations in total investments were closely connected with exports (particularly up to the 1890s), deficits financed by capital imports culminated during periods of deceleration or stagnation in exports and investments. Since domestic demand rose more persistently than did exports or investments, consumption increased relative to other macro variables in the later phase of the swing. In this sequence, employment and real wages as well as the wage share of total income in industry increased.

[9] See Jörberg (1973).

FIGURE 3 ABOUT HERE

Capital imports have traditionally been held to finance heavy investments and the foreign loans were certainly taken for that purpose in the very most cases. The time pattern in the swings, however, implies a relation the other way around. Increases in investment led to increases in employment and consumption that resulted in deficits in the current accounts which were financed by the capital imports.

Monetary integration and capital flows

The trade balance and the capital imports were characterised by great fluctuations in the 1850s and 1860s. These fluctuations can be seen as indications of a badly functioning capital market with a low level of integration between savers and spenders even nationally leading to recurrent "money crises" and to an inelastic credit supply and stop-go policies. Under such circumstances, long-term investments were difficult to undertake in peripheral Europe. These malfunctions were largely overcome by institutional changes mainly in the 1860s and the early 1870s. A more stable long swing pattern in capital imports that more closely followed the investment cycles appeared from the 1870s. The pressure on the monetary supply from trade deficits was offset by capital flows within a span of roughly 20-years investment cycles.

The fluctuations in capital movements are correlated with the degree of monetary integration and exchange stability in the Nordic area. This has been demonstrated by the exchange rate of the Swedish currency in Hamburg 1834-1880 (Lobell 2000). In the first decades after the reintroduction of a metal standard of the Swedish currency 1834, fluctuations of the exchange rates against the nominal metal values were strong. The fluctuations persisted in the 1850s and 1860s indicating that recurrent imbalances in trade put pressure on the monetary arrangements. With the introduction of the Gold Standard in 1873 and the subsequent Scandinavian monetary union a new stability was introduced that interacted with the capital flows. Transaction costs were lowered and the integration of savers and spenders in the industrialisation process facilitated the undertaking of long term investments in the Scandinavian countries.

The lowering of the transaction costs and the integration of the monetary markets are further demonstrated through the investigation of the Swedish specie points by Håkan Lobell (2000) using both a direct and an indirect method. The direct method estimates the actual transaction costs associated with gold and silver imports, while the indirect method measures the specie points by observing the exchange rate at the points in time when silver and gold was exported. The span between the upper and lower specie points was narrowed, particularly in two steps – one in the late 1840s-early 1850s at the onset of larger capital flows and one in the early 1870s in conjunction with the introduction of the Gold Standard. Thus, the Baltic area showed a development similar to the narrowing of the span between the gold points that occurred in the Anglo-American trade in the same period.

Interaction with the international capital market

Clearly, the Swedish economy interacted with other economies on both the market for goods and the market for capital. The timing of the shifts in demand and supply in

European regions or nations is yet one aspect of the market integration. Thus, long investment cycles interacted not only within the Atlantic economy but also within a Northern European economy.

Up to the 1890s, the German capital market was the main supplier to Swedish borrowers only to be superseded by the French. Germany kept however a prominent position. The relation between Swedish and German interest rates is therefore very significant for Swedish capital imports.[10] Swedish interest rates were higher but the long run trend 1850-1910 was towards an elimination of that gap. (This was in contrast to the relation to the French market since French rates kept a lower level even after 1890. That may explain the shift of emphasis in capital imports). The relation evolved, however, in very clear long swings that, as a matter of fact, were pro-cyclical with the swings of Swedish capital imports.

FIGURE 4 ABOUT HERE

The relative interest rates of Germany and Sweden are furthermore correlated with the Swedish investment cycle. The swing starts in a situation of generally low Swedish demand with increasing export income and comparatively low Swedish interest rates, leading to investments and rising demand for capital followed by rising relative interest rates and capital imports (measured as deficits in the current accounts). With the downswing in the investment cycle, demand in the Swedish economy is curtailed and the gap in interest rates is reduced. So are capital imports.

But these swings can not be explained solely from Swedish development. There were long swings or building cycles also in the German economy [11] and, most importantly in the present context, there were swings in German interest rates. The German relation to British interest rates[12] developed in a pattern very similar to that of Swedish capital imports, although to some extent in an anti-cyclical manner. Thus, German rates rose in relation to British rates when Swedish capital imports fell and vice versa. The German swings seem to be leading in relation to Swedish swings, which indicates that an important part of the dynamics in the Swedish industrialisation emanated from the German economy.

FIGURE 5 ABOUT HERE1

From these movements one can hypothesise the following pattern in German and Swedish interaction. 1) German industrial expansion and increased investments in infrastructure and housing leads to 2) a rising demand for capital leading to rising interest rates as well as an increasing demand for goods stimulating Swedish exports leading to 3) the onset of the Swedish investment cycle (in industry and infrastructures) as well as a creative reaction in the German credit market increasing the supply of financial funds followed by 4) a slow down of German investments due to increased competition and lowered demand that on

[10] Swedish interest rates from the yield on savings banks assets and the National Debt Office domestic lending. German rates are the average bond yields from 1870, extrapolated with yields on Prussian State bonds before 1870, from Homer (1977) table 32.
[11] See Gottlieb (1976) and Tilly (1991).
[12] British rates from Homer (1977), tables 19 and 57.

one hand decreased Swedish exports and on the other hand led to lower interest rates in Germany that in combination resulted in continued Swedish capital imports (due to prolonged Swedish internal expansion) leading to 5) increased debt burdens and profit pressures in Sweden, on one hand, reducing capital imports and, on the other, a turn to a new investment cycle in Germany and we are back to position 1.

In this interpretation of the time pattern, Swedish industrial development is very much an extension of the German development (if we extend the analysis to incorporate the labour market and the migration flows there was also an interaction with the American labour market). It remains to be asked, however, why there were swings in the German capital market as well as in the Swedish one relative to the British market.

One reason may be that the industrial discontinuities were stronger in Germany (and in Sweden) than in Britain, due to stronger complementarities in new ”development blocs” around e.g. railways and new steel processes or electricity and engineering. One can see a similar swing in the Norwegian capital imports that start from 1890s and follow a “Swedish pattern” with the breakthrough of electricity. In such a case, new growth forces arose more discontinuously and comprehensively in Germany and in Sweden/Norway than in Britain putting a greater strain on the capital market. Another reason may have been that the British capital market were more integrated in a global economy and in a position to even out regional shifts in demand and supply of capital. This second factor may have sustained the first one. The strong market orientation in the British banking system may have caused a failure of the British financial market to promote innovating industries such as the electrical engineering in the late 19th century. In contrast to the British situation, German and Swedish ties between credit market institutions and industrial companies were more tight that may have allowed more long-term investments in new areas.[13]

Thus, in the last swing before the First World War German and Swedish manufacturing industries appeared as leading in Europe within new growth branches (together with primarily American industries) while the British economy was still dependent upon a rather low-skilled industry in combination with a sophisticated financial sector. Thus, Britain became dependent upon the yield of capital abroad and that has for a long time been regarded as a structural weakness of the British economy of 1914. This perspective was particularly formed within the industrial society developing up to the 1970s. One may, however, apply the perspective that Britain as the first industrial nation already before 1914 was heading towards a productive service economy in relation to European (and global) commerce and industry. Much of the wealth was squandered in the following wars, though, while financial strength was transferred to the peripheral American and Scandinavian, particularly Swedish, economies and this transfer of wealth was – in combination with the industrial structural changes - to put its marked imprint upon the decades following 1910.

[13] Kennedy (1987) proposed this explanation to the British lag behind e.g. Germany and Sweden in the industrial revolution of the 1890s, particularly in the field of electricity.

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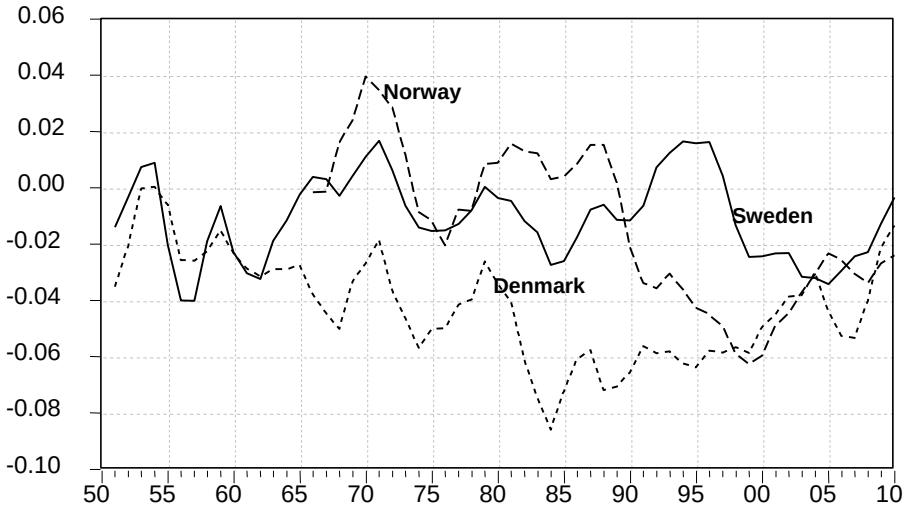
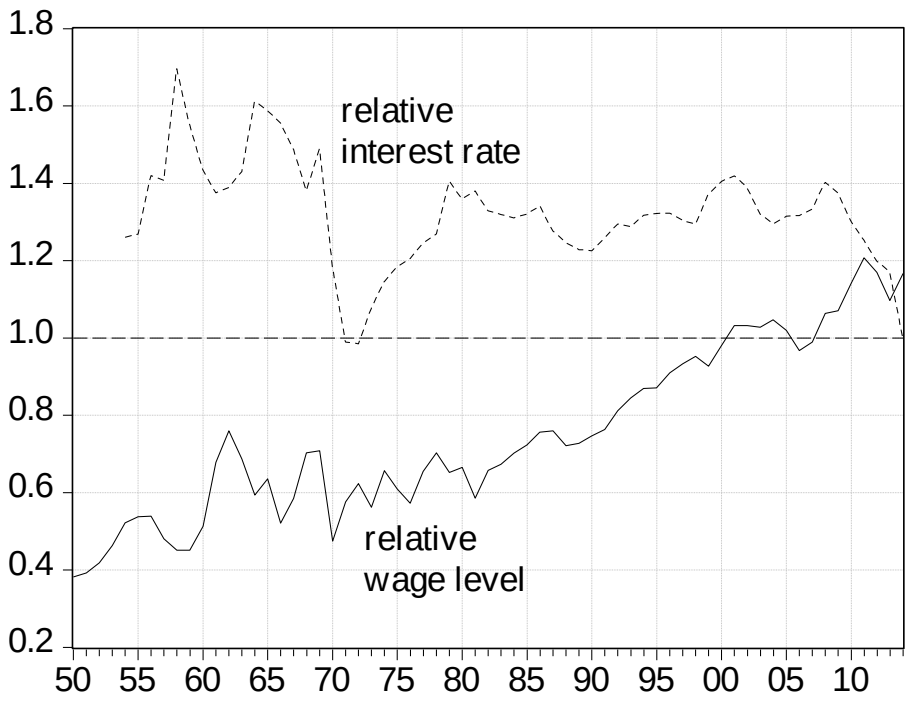
Figure 1. Trade balance as a share of GDP 1850-1910 in Denmark, Norway and Sweden.



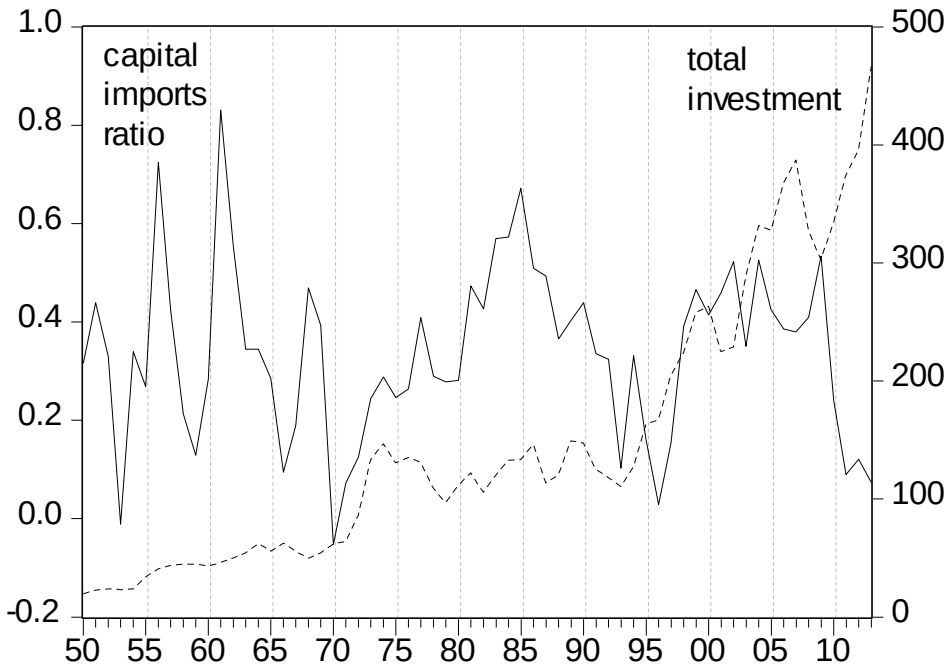
Source: See note 4.

Figure 2. Interest rates and real wages in Sweden in relation to the average in Britain, France and Germany of interest rates 1855-1914 and wages 1850-1914.



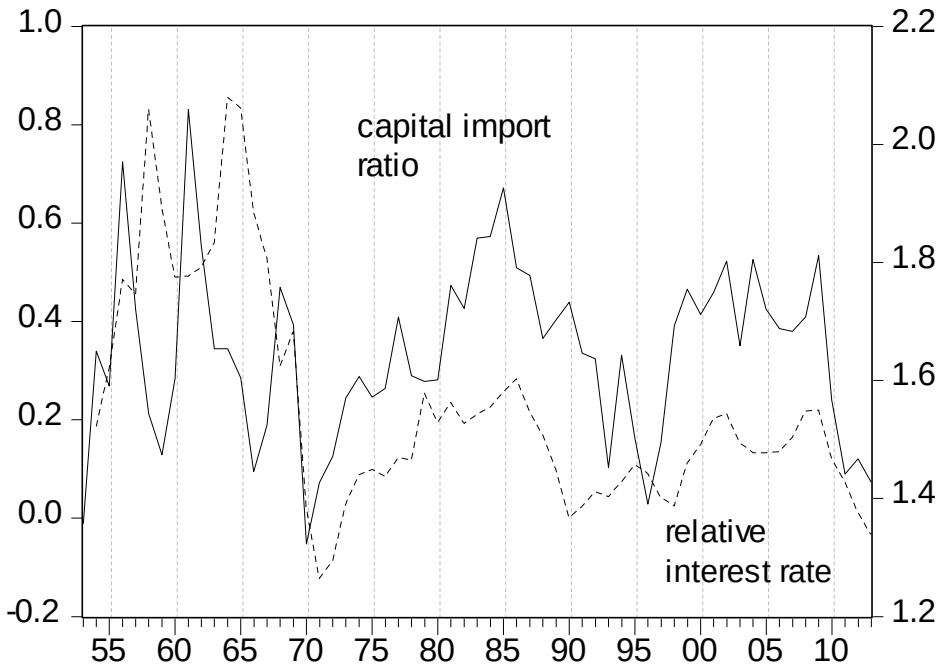
Sources: Wages from Williamson (1995), interest rates from Homer (1977), and Lindahl et.al. (1937), Schön (1994).

Figure 3. Capital imports to Sweden as a proportion of total investments and total investments 1850-1913.



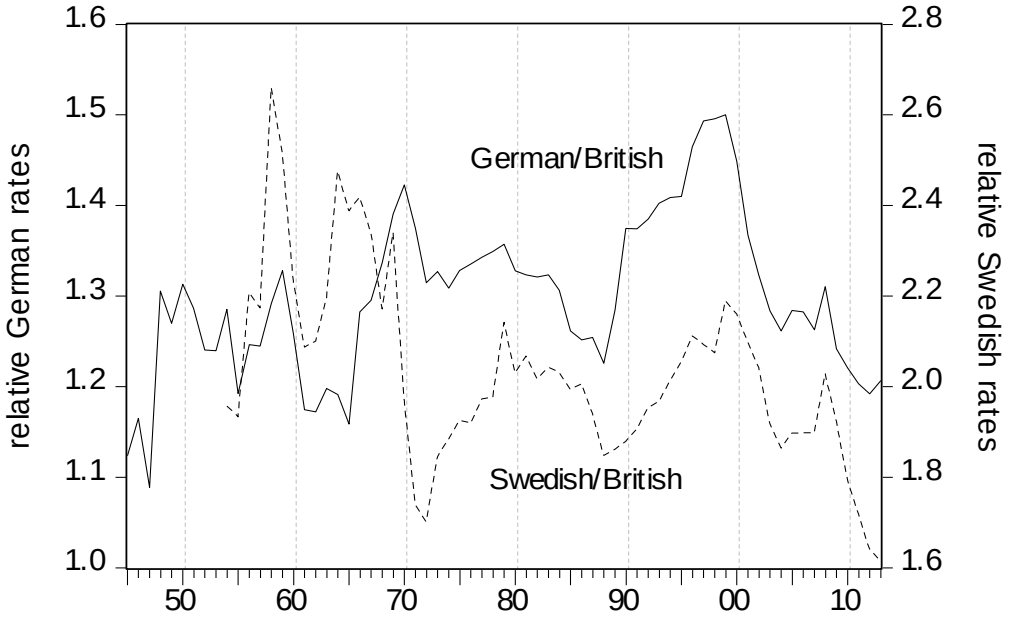
Sources: Capital imports from Schön (1990); investments calculated from Schön (1988 and MS), Johansson (1967) and Pettersson (1987).

Figure 4. Swedish interest rates in relation to German rates (right scale) and capital imports in relation to total investments in Sweden (left scale) 1853-1913.



Sourcs: See fig 2 and fig 3.

Figure 5. German interest rates in relation to British rates (left scale) and Swedish interest rates in relation to British rates (right scale) 1850-1914.



Sources: See fig 2.