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NOMINAL AND REAL EXCHANGE

RATES OF FIM AND SEK IN

1970-1980*

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1. INTRODUCTION

The external value of a currency can be defined in many different ways. A nominal exchange rate expresses the relative price of two national monies. A real exchange rate is the nominal rate adjusted for inflation differentials. Both nominal and real exchange rates can be defined either bilaterally or multilaterally. Multilateral exchange rates are commonly called effective exchange rates.

In this paper we describe the development of the external value of two currencies, the Finnish *Markka* (FIM) and the Swedish *Krona* (SEK). Their external value is presented both in nominal and in real terms, bilaterally against each others and against the US *Dollar* (USD) and the *Deutschmark* (DEM) as well as multilaterally against the currencies of their major trading partners.

The paper begins with an introductory essay on the various aspects of the external value of a currency. Section 3 gives definitions for four concepts of an exchange rate. In section 4 we compare exchange rates of FIM and SEK in 1979 with those in 1970. In section 5 we describe their development graphically using monthly, quarterly and annual data from the period 1971-1980. A summary and the conclusions are presented in the final chapter.

2. VARIOUS ASPECTS OF THE EXTERNAL VALUE OF A CURRENCY

A bilateral exchange rate of any single currency *vis á vis* the US dollar has a long time ago ceased to be informative about the external value of a currency. A common practice today in assessing the movements in the external value of a currency is to use effective exchange rates instead of bilateral ones. Effective exchange rate is a multilateral concept, a weighted average of bilateral exchange rates. Many countries have chosen to peg the value of their currency to a basket of currencies, to so called currency index. This means that central banks intervene in the foreign exchange market in order to keep the fluctuations of the effective exchange rate within some relatively narrow limits. Both Finland and Sweden have adopted this kind of an exchange rate system.[1)]

Moving from bilateral to effective exchange rates brings a number of problems. An effective exchange rate is not a unique relative price but an index number, and as such it depends on the index number formula used as well as on the weights attached to bilateral exchange rates included in the basket of currencies.[2)] This problem, of course, is not different from those which are common in all cases where information has to be aggregated, the measurement of the general price level being one of the most obvious examples.

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1) Sweden adopted this system in 1977, cf. Franzén, Markowski and Rosenberg (1980). Bank of Finland brought the system into use in 1972. The Currency Act was not, however, amended until in 1977, cf. Puro (1978).

2) See Rhomberg (1976) for a general discussion. For index formulae and weighting systems in Sweden and Finland, see Franzén, Markowski and Rosenberg (1980) and Vartia and Vartia (1980).

Above we have referred to nominal exchange rates, i.e. to a relative price of one national money in terms of other national monies. Nominal exchange rates tell us nothing about the real value of currencies. In a national context the real value of money is proportional to the inverse of the price level. If the price level goes up by, say, 10 per cent, the real value or the purchasing power of a given nominal amount of money goes down by about 9 per cent. In a two-country context two national monies and two price levels are involved. When we compare the value of money in two countries, we, as a matter of fact, compare the price of a basket of goods in one country with the price of a basket of goods in the other country, both prices being expressed in a common currency. This kind of comparison gives us what is commonly called a real exchange rate.[3)]

Moving from nominal to real exchange rates brings further problems. What are the two baskets of goods the prices of which we are comparing? Are they identical, like a travelling businessman's daily costs in different cities of the world, or do they differ according to the differences in the production and consumption patterns specific to each country? Obviously, many alternatives are available.

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3) A real exchange rate is the same thing which is traditionally used in comparison of nominal exchange rate with the so called purchasing power parity, i.e. the exchange rate that would prevail if the price levels in the two countries, expressed in the same currency, had moved exactly hand in hand. An extensive survey on the purchasing-power-parity theory is given by Officer (1976). See also McKinnon (1979, Ch. 6).

As above, a real exchange rate can be defined in a multilateral context. A real effective exchange rate measures the development of the price of a basket of goods in one country in relation to some average of prices of certain baskets of goods in a group of other countries, again all prices being expressed in the same currency. The problems mentioned above are now amplified. Any actual measure of a real exchange rate depends, not only on the choice of the index number formula and the choice of the reference countries and the weights attached to them,but also on the baskets of goods the prices of which the price indices measure as well as on the weights and index number formulae used in the construction of price indices in different countries.

These problems, however, are the problems of measurement, and the measurement itself is to great extent dependent on the specific purpose of investigation. Real exchanges rates are most commonly used to indicate pressures in the foreign exchange market. According to the traditional wisdom exchange rate movements should in the long run conform to inflation differentials. This means that the trends of the price levels in different countries should be equal when expressed in a common currency. In other words, real exchange rates should in the long run remain more or less constant.

There is a lot of evidence showing that this is not always true. There are occasions when real exchange rates have changed permanently, for instance, in the case of Finland and Sweden

in the late 1940s (cf. Suvanto, 1978). And even when real exchange rates have remained constant in the longest run, considerable deviations have occured extending over a number of years.

A real exchange rate is closely related to the, in Finland and Sweden more familiar, concept of price competitiveness. This can be looked at from two perspectives, from the demand side and from the supply side. We lose our competitiveness if our export prices in the world market rise faster than the prices of other tradable goods with nominal exhange rates unchanged. Other goods are substituted for our goods, and we lose our market shares. This is the demand side perspective to price competitiveness. This example shows that an exogenously determined improvement of the terms of trade brings not only beneficial consequences for us.

We may also lose our competitiveness if our exports are sold in the world market at unchanged relative prices, but our wages and consumer prices rise faster than in the rest of the world. In this case we lose market shares because domestic production of our tradable goods becomes unprofitable at given world market prices. This is the supply side perspective to price competitiveness.

This distinction is important, because it gives a glue to interprete eventual differences between various measures of a real exchange rate.[4] The former perspective emphasizes the

4) We have taken this distinction from Cardoso and Dornbusch (1980).

relationship between the terms of trade and the real exchange rate, whereas the latter perspective emphasizes the relationship between competitiveness and the profitability of our export industries. The latter perspective has traditionally been dominant both in the Finnish and the Swedish economic policy discussion.

These two kinds of measures of a real exchange rate may move together. On the one hand, an increase in the world market price of our exports relative to other tradable goods may, because of the demand pressure in the labour market, lead to an increase in our unit labour costs relative to those in other countries. On the other hand, given a sufficient market power of our export industries an exogenous increase in domestic costs may lead to a raise of our export prices as firms pass cost increases into prices in order to maintain profitability.

Few countries are in a position to be a sole producer of the type of products they export. Neither Finland nor Sweden belongs to them. Many firms, however, are able to control the market price of their products to some extent and at least temporarily. This may be because of certain distinctive characteristics of their products, or because the production is 'tailored' according to the requirements of the buyer. If a country predominantly produces these kinds of goods, or *tradables I* as they are called by McKinnon (1979, 74-75), it is more likely that domestic costs relative to those in other

countries dominate the fluctuations in the real exchange rate with unchanged nominal exchange rates.

Other types of tradable goods, called *tradables II* by McKinnon, are more homogeneous without any distinctive firm or country specific characteristics. Consequently, their prices tend to fluctuate together with the fluctuations in the supply and demand in the world market. If these type of goods make a major proportion of the country's production, it is likely that an exogenous increase in domestic costs leads to the deterioration of profitability and hence to the loss of market shares. On the other hand, if there is excess demand for *tradables II* in the world market, created, for instance, by a speculative boom, this pulls the relative price of our goods up, and our firms receive a windfall gain. Our demand side competitiveness, however, is lost leading to a decrease of the volume of our exports, which eats a part or all of the gain brought by the price increase. If the windfall gain pulls also wages up, and if, which is likely, the relative price of these goods returns to the earlier level once the speculative boom has been passed, then our export firms find themselves in a situation in which the supply side competitiveness has been lost.

3. DEFINITIONS

An exchange rate is a relative price of two national currencies, and like any other relative price it can be expressed in two ways. In this paper we define an exchange rate as a foreign currency price of one unit of our currency. The exchange rate is hence a quantitative expression for the external value of our currency.

A nominal bilateral exchange rate of our currency *vis á vis* to a foreign currency is denoted by S_{hi} and is defined as follows:

(1) 1 unit of our currency h = S_{hi} units of a foreign currency i.

Our currency *depreciates*, bilaterally in nominal terms, when its price in terms of a foreign currency goes down. Similarly, we say that our currency *appreciates* when its price in terms of a foreign currency goes up.

A nominal effective exchange rate tells what is the price of one unit of our currency in terms of a given basket of other currencies, or, looked from the other side, it is the inverse of the price of a given basket of currencies in terms of our currency. The price of the basket is difficult to grasp without reference to its price in some other period. Therefore, a nominal exchange rate is expressed as an index number, which tells the external value of our currency in relation to its external value in some base period.

We define the nominal effective exchange rate of our currency through a general index number formula as follows

$$(2) \qquad S^{*}_{hI} = F(w_i, S_{hi}/S_{hio}: i \in I); \; \partial F/\partial S_{hi} > 0,$$

where w_i, $\Sigma w_i = 1$, refer to the weights attached to nominal bilateral exchange rates S_{hi}, and I refers to the group of countries within our currency index. A bilateral appreciation of our currency against any other currency i implies also an effective appreciation if other bilateral exchange rates remain constant.

A real bilateral exchange rate is the nominal bilateral exchange rate adjusted to the inflation differential cumulated from a given base period, or

$$(3) \qquad R_{hi} = (S_{hi}/S_{hio})(P_h/P_i),$$

where P_i is a price index for the country i and P_h a price index for our country, both price indices having the same base period. Real exchange rate is here presented as a relative change from the same base period for which the price indices have been constructed. From equation (3) it is obvious that the real exchange rate is equal to the ratio of the cumulative inflation at home, expressed in the foreign currency, to the cumulative inflation in the foreign country, or the relative price of our goods in terms of foreign goods as compared to that in the base period. Our currency appreciates bilaterally in real terms if it appreciates in nominal terms, or if our prices rise faster than foreign prices.

A real effective exchange rate is defined in the same way as the nominal effective exchange rate, the only difference being that real bilateral exchange rates are used instead of the nominal ones, or

$$(4) \qquad R^*_{hI} = F(w_i, R_{hi}: i \in I); \; \partial F/\partial R_{hi} > 0.$$

The interpretation is the same as in the case of the real bilateral exchange rate: our currency appreciates effectively in real terms against the currencies of the rest of the world if it appreciates effectively in nominal terms or if the rate of inflation at home exceeds the average rate of inflation abroad.

A real appreciation of our currency implies the loss of our price competitiveness either on the demand side or on the supply side depending on the price indices used in the definition of the real exchange rate. Correspondingly, a real depreciation implies an improvement in our price competitiveness.

4. EXCHANGE RATES IN 1970 AND 1979

In this section we compare the external value of FIM and SEK, defined in many different ways, in 1979 to those in 1970. Exchange rates are defined bilaterally, FIM against SEK, DEM and USD and SEK against FIM, DEM and USD, as well as multilaterally, FIM against the currencies of the major trading partners of Finland and SEK against the major trading partners of Sweden.[5)]

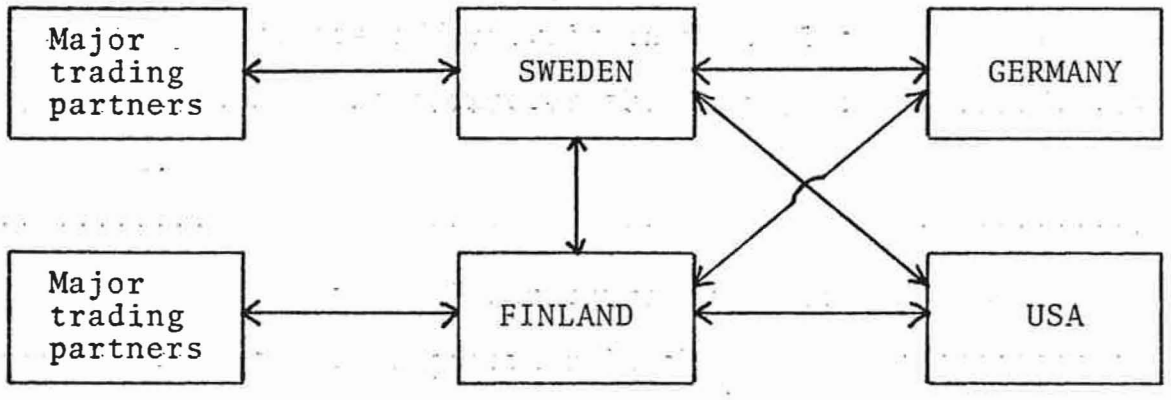

Table 1 shows the nominal bilateral exchange rates of FIM and SEK in terms of the above mentioned foreign currencies. It is seen that over the 1970s FIM has appreciated against USD and depreciated against SEK and DEM. SEK has appreciated against both FIM and USD but depreciated against DEM.

Table 2 presents the cumulative change of the nominal effective exchange rate of FIM and SEK from 1970 to 1979. For both currencies three measures of the nominal effective exchange rate are pre-

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5) Some of the bilateral links are, of course, formally redundant because two bilateral links imply the third one provided that nominal bilateral exchange rates are approximately equal in different centers.

sented. According to the Bank of Finland currency index FIM depreciated effectively by some 18 per cent. The ETLA and OECD indices give only slightly different depreciation. Much greater differences can be seen between various measures of the nominal effective exchange rate of SEK. The Riksbank index indicates a cumulative effective depreciation of some 15 per cent, and the OECD index implies about 11 per cent depreciation. According to the IMF index the nominal effective exchange rate of SEK was in 1979 at about the same level as it was in 1970. Without any generally accepted criterium it is impossible to tell which of these indicators gives the most appropriate picture about the development of the nominal external value of these two currencies over the 1970s.

Table 3 shows a number of real bilateral exchange rates for both FIM and SEK. It is seen that in the period 1970 to 1979 the real appreciation of both of these currencies against USD was much greater than the nominal appreciation. On the other hand, the real depreciation of both FIM and SEK against DEM was small as compared to the rather big nominal depreciation. FIM appreciated in real terms also against SEK even though in nominal terms it depreciated.

The real appreciation of FIM and SEK, and, in fact, of most of the other convertible currencies as well, against USD implies that Finland, Sweden and many other countries have lost competitiveness to the United States. This reflects the fact that the US Dollar was overvalued in the beginning of the 1970s,

which was one of the major reasons for the breakdown of the Bretton Woods system and the devaluation of the dollar in 1973.

Finland has lost competitiveness also in relation to Sweden. The degree of the loss of competitiveness, however, depends to great extent on which prices or costs are used in the comparison. Real appreciation of FIM against SEK is the highest when measured by relative unit labour costs.

The rate of real appreciation of both FIM and SEK against USD is more than twice as high when measured by relative unit labour costs than when measured by relative price levels. In Finland the unit labour costs measured in dollars rose by 100 per cent, and in Sweden by 73 per cent, relative to those in the United States. Against DEM FIM depreciated in real terms by 13 per cent when measured by relative consumer prices but appreciated by about 5 per cent when measured either by relative export prices or by relative unit labour costs. Also SEK depreciated most in real terms against DEM when measured by relative consumer prices and least when measured by relative export prices.

Table 4 gives some measures of the real effective exchange rate for both FIM and SEK. Both currencies have effectively appreciated in real terms over the nine-year period from 1970 to 1979. The rate of appreciation varies between 1 to 14 per cent depending on the price indices used in the comparison. Effective

Table 1. Nominal bilateral exchange rates of FIM and SEK in 1970 and 1979

		1970	1979	Appreciation
1 FIM	=	USD 0.239	USD 0.257	+ 7.5 %
	=	DEM 0.897	DEM 0.470	- 47.6 %
	=	SEK 1.240	SEK 1.098	- 11.5 %
1 SEK	=	USD 0.193	USD 0.233	+ 20.7 %
	=	DEM 0.702	DEM 0.427	- 39.2 %
	=	FIM 0.803	FIM 0.904	+ 12.6 %

Inverses of the average selling rates of Bank of Finland and Sveriges Riksbank. Sources: Suomen Pankin vuosikirja and Statistisk Årsbok.

Table 2. Nominal effective exchange rates for FIM and SEK in 1979 (1970=100)

Currency	Institute	Index	Appreciation 1970-79	Weights
FIM	Bank of Finland	81.5	- 18.5 %	trade shares
	OECD	81.2	- 18.8 %	elasticity adjusted trade weights (MERM)
	ETLA	82.0	- 18.0 %	export shares
SEK	Sveriges Riksbank	84.5	- 15.5 %	trade shares
	OECD	88.9	- 11.1 %	elasticity adjusted trade weights (MERM)
	IMF	100.9	0.9 %	elasticity adjusted trade weights (MERM)

Sources: Bank of Finland, Sveriges Riksbank, OECD, International Financial Statistics.

Table 3. Real bilateral exchange rates of FIM and SEK in 1979 (1970=100)

Currency	Foreign country	Nominal bilateral exchange rate $(S_{hi}/S_{ho})\cdot 100$	Ratio of price indices P_h/P_i	Real bilateral exchange rates[1]	Appreciation 1970→79
FIM	USA	107.5	XPI_{fin}/XPI_{usa} = 1.31	141	+ 41 %
			WPI_{fin}/WPI_{usa} = 1.22	131	+ 31 %
			CPI_{fin}/CPI_{usa} = 1.39	149	+ 49 %
			ULC_{fin}/ULC_{usa} = 1.87	201	+101 %
	Germany	52.4	XPI_{fin}/XPI_{ger} = 1.98	104	+ 4 %
			WPI_{fin}/WPI_{ger} = 1.70	89	- 11 %
			CPI_{fin}/CPI_{ger} = 1.66	87	- 13 %
			ULC_{fin}/ULC_{ger} = 2.00	105	+ 5 %
	Sweden	88.6	XPI_{fin}/XPI_{swe} = 1.19	105	+ 5 %
			WPI_{fin}/WPI_{swe} = 1.14	101	+ 1 %
			CPI_{fin}/CPI_{swe} = 1.21	108	+ 8 %
			ULC_{fin}/ULC_{swe} = 1.31	116	+ 16 %
SEK	USA	120.7	XPI_{swe}/XPI_{usa} = 1.10	133	+ 33 %
			WPI_{swe}/WPI_{usa} = 1.07	129	+ 29 %
			CPI_{swe}/CPI_{usa} = 1.14	138	+ 38 %
			ULC_{swe}/ULC_{usa} = 1.43	173	+ 73 %
	Germany	60.8	XPI_{swe}/XPI_{ger} = 1.66	101	+ 1 %
			WPI_{swe}/WPI_{ger} = 1.49	91	- 9 %
			CPI_{swe}/CPI_{ger} = 1.36	83	- 17 %
			ULC_{swe}/ULC_{ger} = 1.53	93	- 7 %
	Finland	112.6	XPI_{swe}/XPI_{fin} = 0.84	95	- 5 %
			WPI_{swe}/WPI_{fin} = 0.88	99	- 1 %
			CPI_{swe}/CPI_{fin} = 0.82	92	- 8 %
			ULC_{swe}/ULC_{fin} = 0.77	87	- 13 %

1) See p. 9 for the definition.

XPI = export unit value; WPI = wholesale price index;
CPI = consumer price index; ULC = unit labour cost.

Source: International Financial Statistics and ETLA.

Table 4. Real effective exchange rates for FIM and SEK in 1979 (1970=100)

Currency	Definition of the price index	Index	Appreciation	Weights
FIM	ULC	112.1	12 %	import shares
	XPI	111.6	12 %	export shares
	WPI	101.2	1 %	export shares
SEK	ULC	104	4 %	elasticity adjusted trade weights (MERM)
	XPI	113.5	14 %	
	WPI	100.7	1 %	

Sources: International Financial Statistics and ETLA.

real depreciation is smallest when measured by relative wholesale prices and highest when measured by relative export prices values or in Finnish care by unit labour costs.

The real effective appreciation implies that both countries have lost competitiveness in relation to their major trading partners. These indicators should, however, be read with caution. First, one must remember that so far we have compared the real exchange rates in 1979 with those in 1970, and there is no reason to assume that the year 1970 is an appropriate year of reference in the sense that exchange rates would then have been in equilibrium. Indeed, there are reasons to believe that this was not the case. As mentioned above the US Dollar most likely was overvalued against the Western European currencies, and the developments

since the breakdown of the Bretton Woods system, especially the real depreciation of USD against the major European currencies, have broguht exchange rates more into balance as they were in the beginning.[6] Secondly, during the floating exchange rate period there has been wild short term fluctuations in nominal bilateral exchange rates, which, of course, affect also the real effective exchange rates. Therefore having a measure for the real exchange rate for one year does not tell whether this has been temporarily out of trend or not. Thirdly, the practical meaning of a quantitative measure of the rate of appreciation or the loss of competitiveness over a nine-year period can be questioned. In most occasions it is the short term fluctuations in real and nominal exchange rates which matter for the forward looking decision makers in business and banking. In the next section we shall look at the development of real and nominal exchange rates on a more short-term basis.

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6) The actual disparity of exchange rates in 1970 was the starting point of Prades (1979 and 1980) when he constructed indicators for the competitiveness of the Belgian economy.

5. FLUCTUATIONS IN THE EXTERNAL VALUE OF FIM AND SEK IN THE 1970s

Below we shall present a number of graphs describing the course of the nominal and real exchange rates of FIM and SEK from 1970 to 1980. Before going into the graphs it may be helpful to collect the dates of the formal devaluations and revaluations of the currencies concerned as well as of the decisions concerning the changes of regimes:

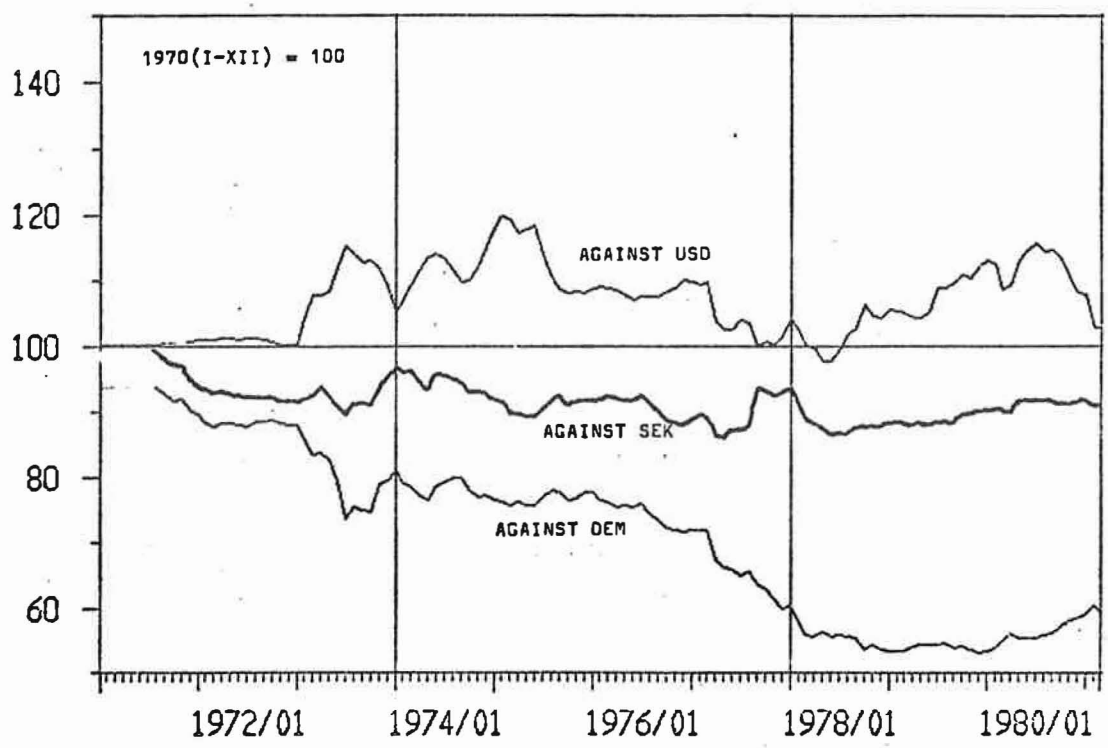
August 1971	dollar gold convertibility suspended
December 1971	Smithsonian realignment, USD devalued, DEM and other currencies revalued
February 1973	USD devalued
March 1973	DEM revalued, joint float of most European currencies against USD, SEK joined the "snake"
June 1973	DEM revalued
October 1976	DEM revalued
April 1977	FIM devalued (5 1/2 % effectively)
August 1977	SEK devalued (10 % effectively) SEK left the "snake" and pegged to the currency index
September 1977	FIM devalued (4 % effectively) FIM was pegged to the currency index since 1972. This practice was taken into the law by the new Currency Act amended in November 1977.
February 1978	FIM devalued (7 1/2 % effectively)
October 1978	DEM revalued
March 1979	EMS created
September 1979	FIM revalued (2 % effectively)
"	DEM revalued; first EMS realignment
March 1980	FIM revalued (2 % effectively)

Nominal bilateral exchange rates are presented in Graphs 1 and 2.

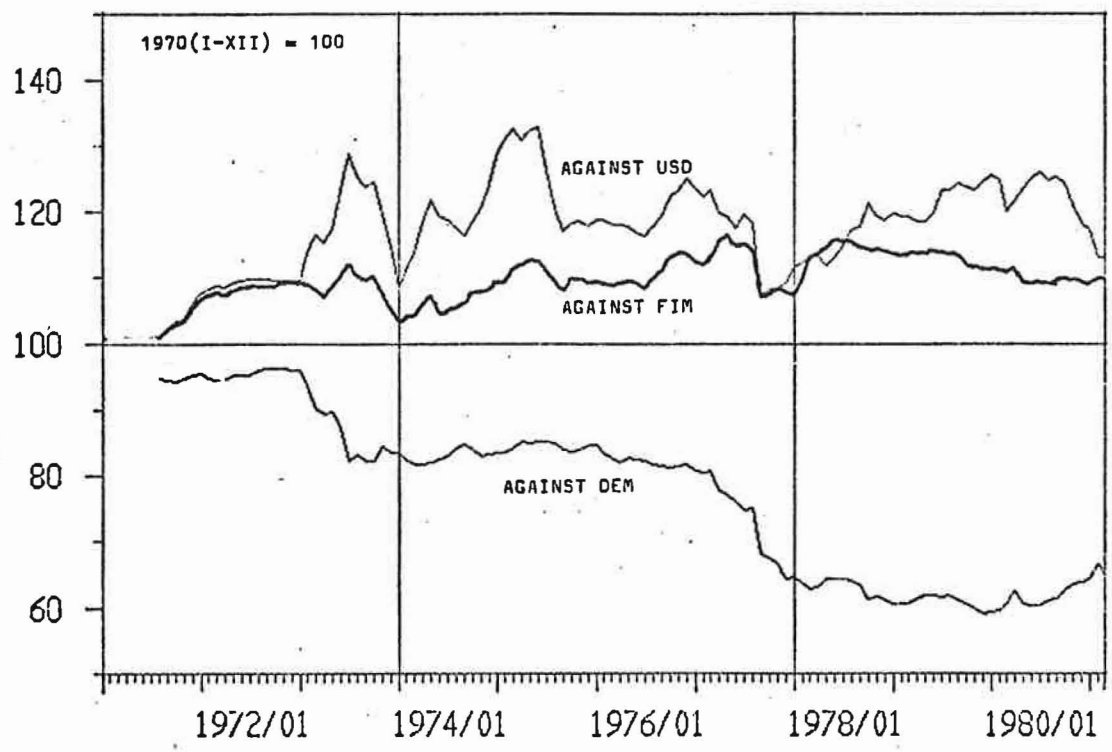
The major shift in the SEK/FIM parity occured in the autumn 1971 when USD was devalued and FIM remained in parity with it, whereas SEK at the same time appreciated against USD together with DEM. Thereafter there has not been any major shift in the SEK/FIM parity. It remained more or less constant in the spring 1973 when USD again was devalued against the European currencies. During the period when SEK was in the "snake" FIM had a tendency to depreciate against it, but this trend was reversed by the devaluation of SEK in August 1977 and the small revaluations of FIM in September 1979 and in March 1980.

Since 1973 the fluctuations of the exchange rates of both FIM and SEK against USD show a similar pattern, the major difference being that the variations of the USD/SEK rate were greater than those of the USD/FIM rate during the period when SEK was in the "snake". In the other side of the coin the variations of the DEM/FIM rate in that period were greater than those of the DEM/SEK rate. The trend of the exchange rates of both FIM and SEK against DEM has been downwards. The adjustment to the underlying inflationary differentials has been helped by discrete devaluations. An appreciation of FIM and SEK against DEM in the most recent months is explained by the strengthening of USD.

Graph 1. Nominal bilateral exchange rates of FIM, January 1971-March 1981 (1970=100)



Graph 2. Nominal bilateral exchange rates of SEK, January 1971-March 1981 (1970=100)



Graphs 3 and 4 present some measures of the nominal effective exchange rate of FIM and SEK. In the case of FIM there are hardly any differences between the three measures presented even though the weights in different indices differ to some extent (cf. Table 3). FIM depreciated effectively together with USD in 1971. Thereafter the external value of FIM remained more or less constant or slightly appreciated until the devaluations in 1977 and 1978.

In the Swedish case the three measures differ considerably.[7] The IMF index departed from the Riksbank and the OECD indices already in 1973. This deviation remained fairly constant until the end of 1977, when the gap again became wider. The OECD index departed from the Riksbank index during the year 1977. We have had no opportunity to check what is the source of these differences. Nevertheless, from the point of view of the short term fluctuations the three indices give a rather similar general picture. SEK had a tendency to appreciate effectively against the currencies of her major trading partners from 1973 to 1976, which was a result of being in the "snake" together with the strong DEM. SEK started to depreciate effectively already towards the end of 1976, and in August 1977 Sweden had to leave the "snake" and to devalue her currency. Since the devaluation the effective rate of SEK has remained practically constant.

Graphs 5 and 6 show the real bilateral exchange rates of FIM and SEK against each others and against DEM and USD. These rates are based on wholesale price indices. It is seen that both

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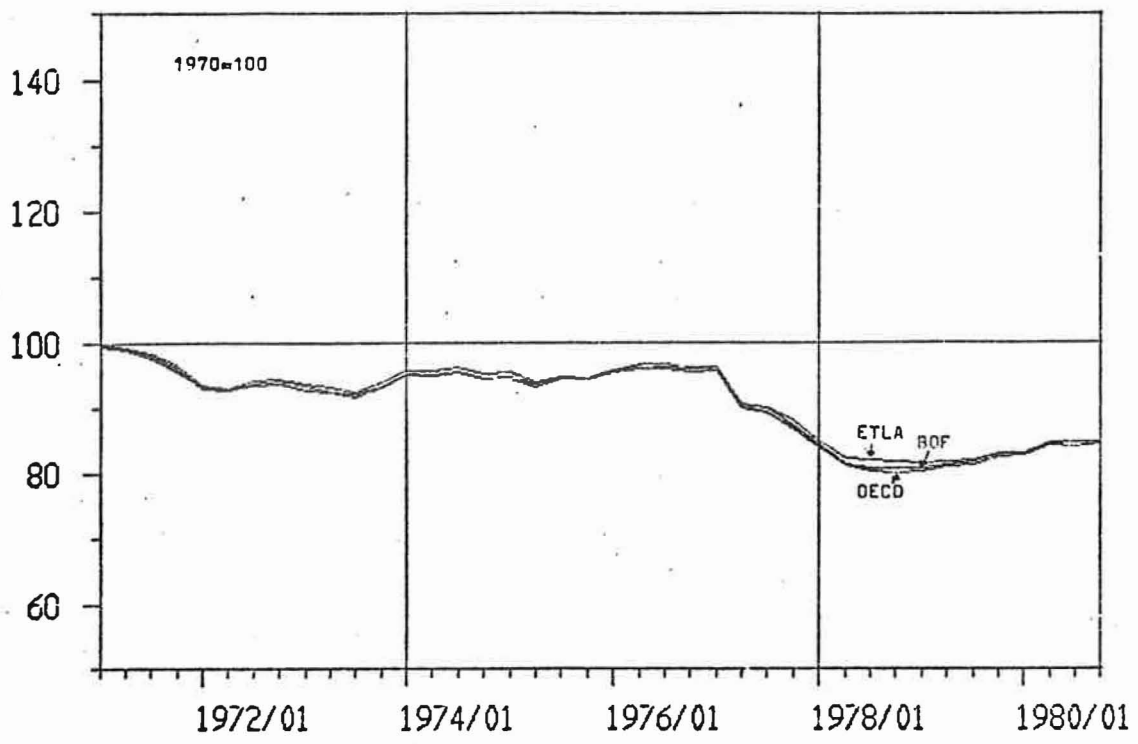
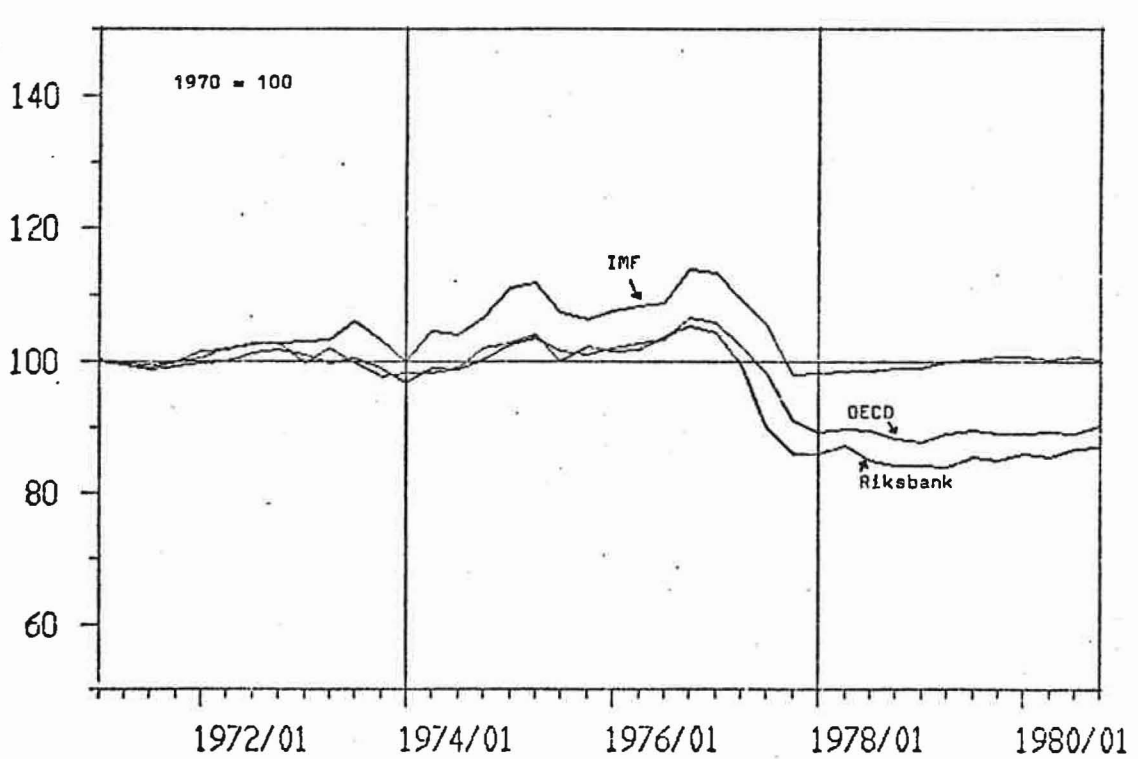
7) Sveriges Riksbank provided us with data on nominal effective exchange rates of SEK, for which we are grateful.

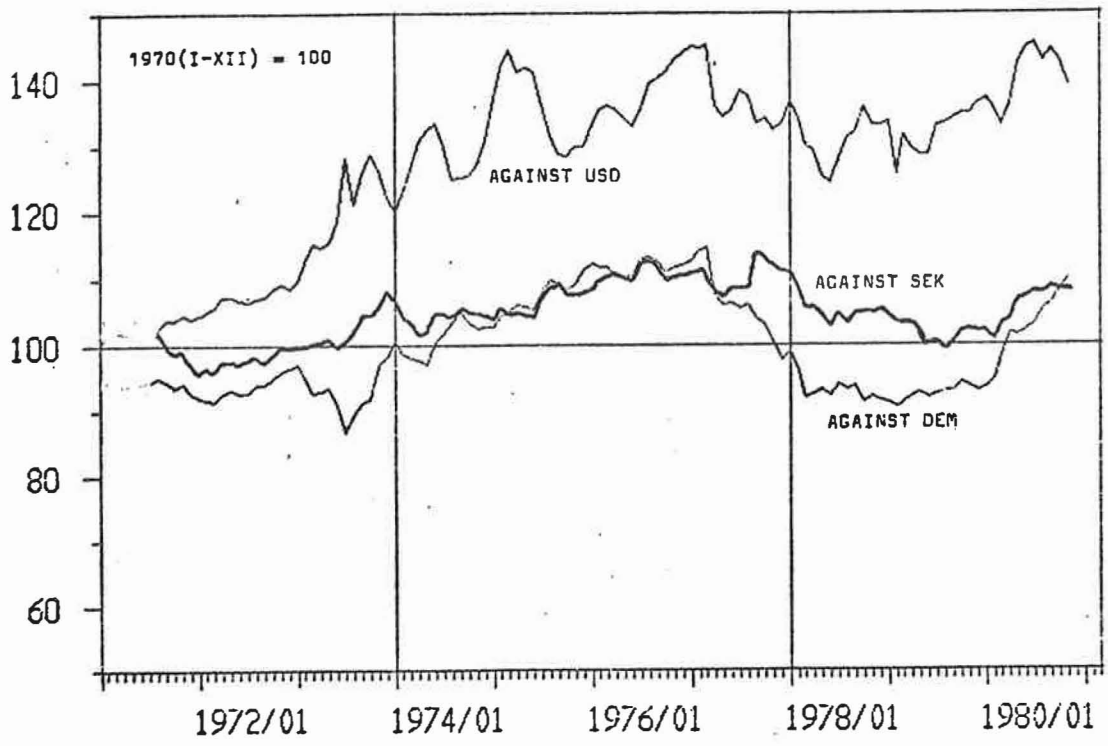
Graph 3. Nominal effective exchange rate of FIM, 1971(Q1)-1980(Q4) (1970=100)



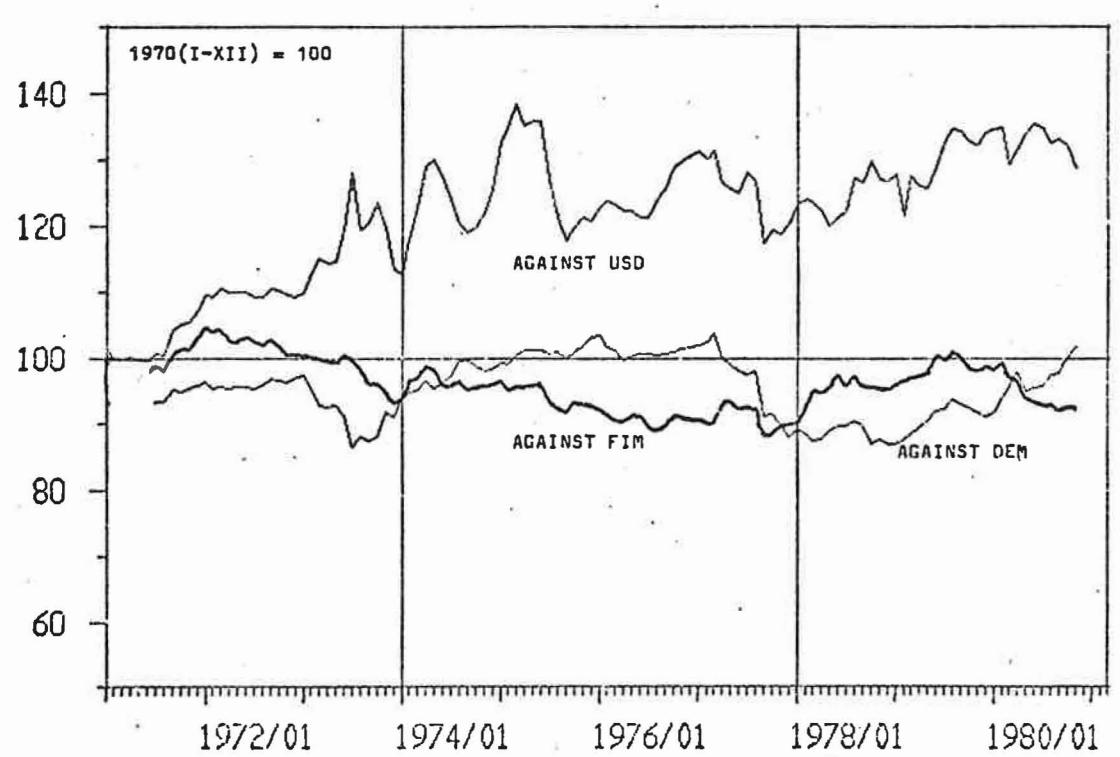
Graph 4. Nominal effective exchange rate of SEK, 1971(Q1)-1980(Q4) (1970=100)



Graph 5. Real bilateral exchange rates; wholesale prices in Finland relative to those in Germany, Sweden and USA, in common currency, January 1971-November 1980 (1970=100)



Graph 6. Real bilateral exchange rates; wholesale prices in Sweden relative to those in Finland, Germany and USA, in common currency, January 1971-November 1980 (1970=100)

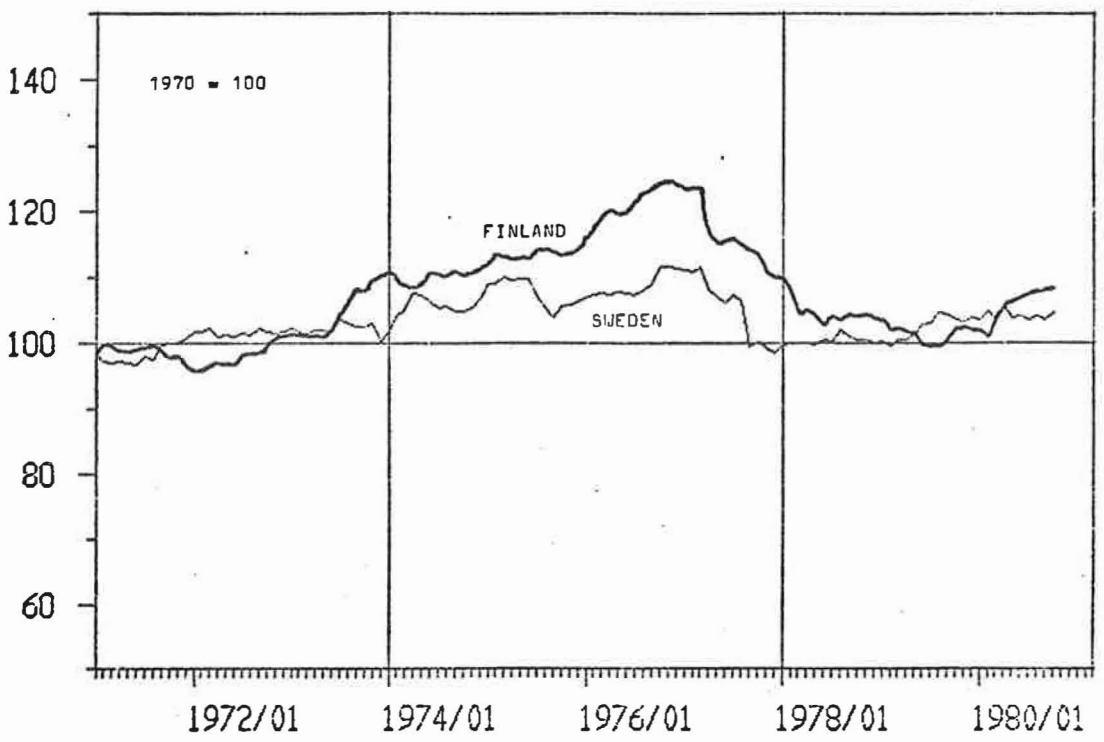


currencies have appreciated in real terms against USD. FIM appreciated both before and after the formal devaluations of USD in 1973. This trend was not reversed before the formal devaluations of FIM in 1977. The real appreciation of SEK against USD took place mainly in connection with the formal devaluations of USD in 1971 and 1973. The remarkable short term fluctuations in the real exchange rate of SEK and FIM against USD are largely the same as the fulctuations in the corresponding nominal rates.

Even though there were great cyclical fluctuations in the bilateral real exchange rates of FIM and SEK against DEM, there has not been any consistent drift away from their 1970 parities. FIM gradually appreciated in real terms against both SEK and DEM throughout 1971 to 1976, but the 1977 and 1978 devaluations more or less restored the earlier parities. A rather rapid appreciation occured again during 1980, when FIM was revalued for the second time by 2 per cent effectively and when the rate of inflation had again started to accelerate. In that year the DEM/FIM real exchange rate almost reached the earlier record level in 1976. The DEM/SEK real exchange rate shows the same kind of profile as the DEM/FIM rate but with a smaller amplitude.

Real effective exchange rates of FIM and SEK, based on whole-sale prices, are presented in Graph 7. In the years 1971 to 1976 FIM appreciated effectively by some 25 per cent and SEK by some 10 per cent in real terms. By this measure both countries

Graph 7. Real effective exchange rates; relative wholesale prices in Finland and in Sweden, January 1971-November 1980 (1970=100)



lost competitiveness. Finland lost competitiveness especially in 1973 and again in 1976. It took two years for Finland to restore competitiveness by heavy deflation and by in total 15 per cent nominal effective devaluation. In Sweden the 10 per cent effective devaluation in 1977 more or less restored the earlier parity. SEK effectively appreciated in real terms again in 1979 and FIM in 1980.

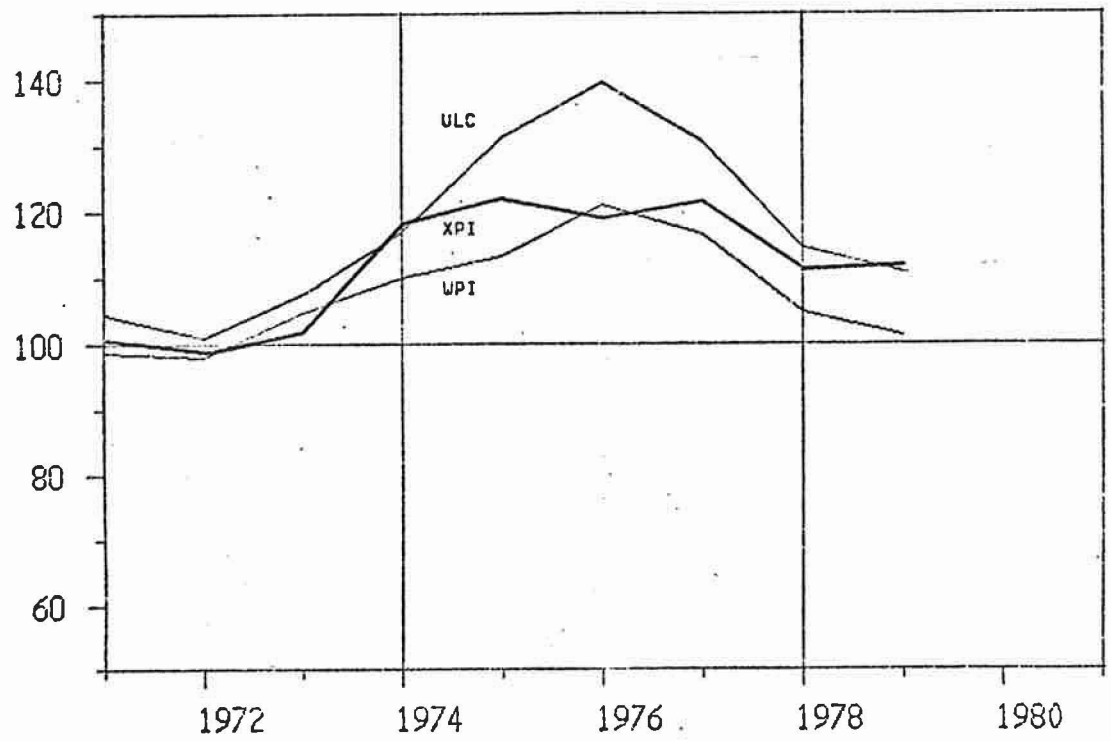
The real effective exchange rates presented above are based on wholesale price indices. In the following two graphs (graphs 8 and 9) there are two other measures of the real exchange rate for FIM and SEK, one based on export unit values and the other based on unit labour costs.[8] For comparison the rates based on wholesale prices are also presented. The data are annual averages.

8) Real effective exchange rate for Finland based on unit labour costs is equal to the inverse of ETLA's competitiveness indicator, cf. Sihtola 1978.

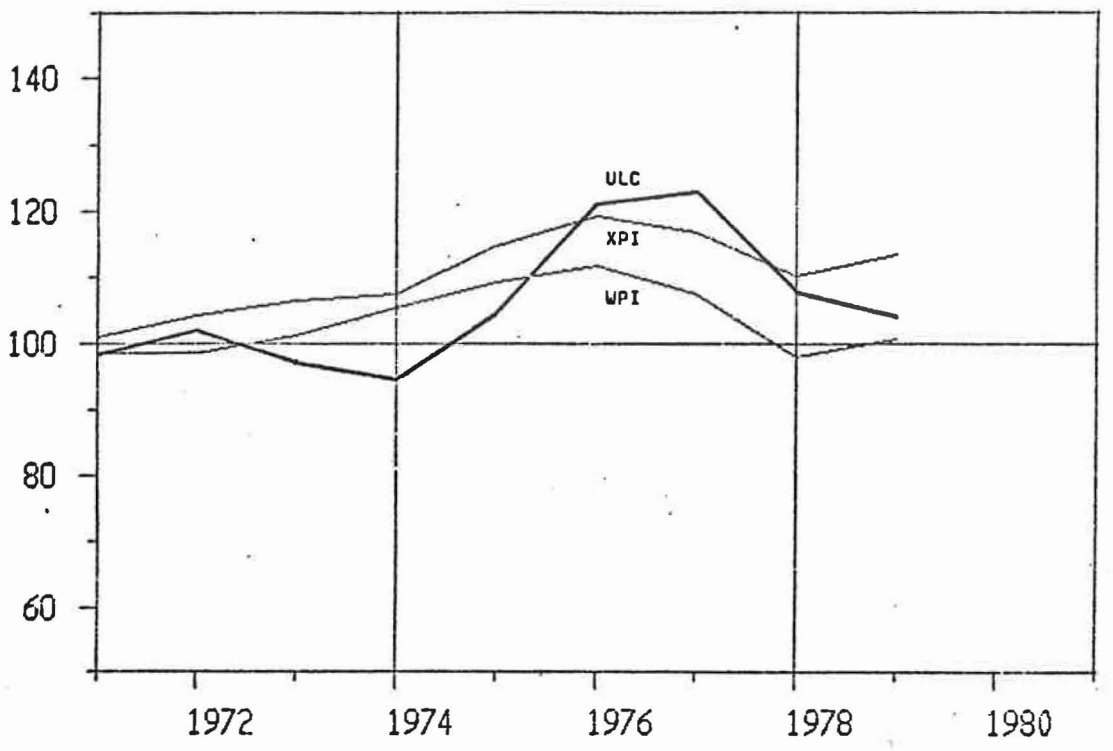
In the Finnish case all the three measures show a similar general pattern, a rapid real effective appreciation from 1972 to 1976 and a rapid depreciation thereafter. There are, however, interesting differences. Using the measure based on export prices it is seen that the appreciation took place mainly in 1974. This was the time of the first oil crisis, when the terms of trade of most Western countries considerably deteriorated, whereas in Finland it, in fact, improved due to the rapid increase of the prices of forest industry products, which made 57 per cent of the Finnish exports to the West in 1974. These products belong to the *tradables II* category, using the terminology introduced in Section 2, whereas the exports of the major trading partners of Finland consist mainly of manufactured industrial goods or *tradables I*. When the price of the major Finnish exports rose relative to the prices of the exports of other industrialized countries, Finland lost her demand side competitiveness. This was reflected already in 1975 as a 17 per cent decline in the volume of exports (28 per cent decline in the exports of forest industry products). Domestic price and wage inflation had started to accelerate already in 1973 and continued to accelerate throughout 1975 and 1976. This is seen in Graph 8 as a rapid appreciation of the real effective exchange rate of FIM measured by relative unit labour costs. The deterioration of the supply side competitiveness continued after the demand side competitiveness had already started slightly to improve in 1976, and this trend was not reversed before the deep recession had started to bite on inflation and when FIM had been effectively devalued in 1977.

Comparison with Sweden is interesting. Like FIM/SEK was appreciating effectively in real terms during the period from 1972 to 1976 when measured by relative wholesale prices or by relative export prices, but unlike FIM it was depreciating in real terms in the years 1973 and 1974 when measured by relative unit labour costs. In other words Sweden like Finland was losing the demand side competitiveness of her exports in those critical years, but she was gaining in the supply side competitiveness. The supply side competitiveness was then lost very rapidly in 1975 and 1976.

Graph 8. Real effective exchange rates; relative unit labour costs, export unit values and wholesale prices in Finland, 1971-1979 (1970=100)



Graph 9. Real effective exchange rates; relative unit labour costs, export unit values and wholesale prices in Sweden, 1971-1979 (1970=100)



6. SUMMARY AND CONCLUSIONS

The fact is that nominal bilateral exchange rates have been, and most probably will be, fluctuating rather wildly. This means that in the present day world the exchange rate uncertainty is the fact, and this uncertainty must in one way or another be reflected in the costs of international transactions. Stabilizing the effective exchange rates towards a basket of currencies, as both Finland and Sweden do, does in no way alter this fact. On the contrary, it may even increase this uncertainty, because if the exchange rates between USD and the EMS currencies are volatile and if the external value of FIM or SEK is kept stable in terms of some *average* of both USD and the EMS currencies, then the bilateral rates of FIM or SEK *vis á vis both* USD *and* the EMS currencies are bound to be volatile. Stabilizing the effective exchange rate may be important for the conduct of economic policy, but for individual firms the bilateral exchange rates which dominate their trade are of greatest importance. For different firms different currencies are important, but no firm can without cost escape the exchange rate uncertainty whatever are the weights and the index number formulae of the effective exchange rate in terms of which the external value of the domestic currency is stabilized.

Real exchange rates of FIM and SEK, bilaterally against each others and against DEM as well as multilaterally against the currencies of their major trading partners, have shown a tendency to remain more or less constant over the 1970s. But this was only a tendency. Both Finland and Sweden experienced the real appreciation or the loss of competitiveness both on

the demand and on the supply side, in the mid 1970s, and in both countries the restoration of competitiveness has been painful.

In the literature it has become popular to distinguish between real shocks and monetary shocks (cf. e.g. Frenkel, 1981). Real shocks are fundamental changes in the relative prices of goods produced in different countries, or changes in the terms of trade. These can shift the real exchange rates permanently. Monetary shocks affect nominal exchange rates rather quickly, and because prices of goods do not adjust immediately these shocks affect also the real exchange rates. But sooner or later either the prices of goods have to adjust accordingly or the nominal exchange rates have to return to the earlier parities. Hence the monetary shocks affect the real exchange rates only temporarily.

In countries like Finland and Sweden where capital movements are strictly controlled and where the exchange rate policy aims at stabilizing the effective exchange rate, the monetary shocks, originated either from domestic policies or from external shocks through the balance of payments, affect mainly domestic demand and trade flows and not the nominal exhange rates directly. If domestic costs and prices are sensitive to the demand pressure created by expansionary monetary shocks but, on the other hand, are slow to adjust in response to deflationary monetary shocks, situations where the supply side competitiveness is lost are more likely to arise. This aspect, the relationship between the profitability of firms and real exchange rates, is a rather neglected area in the theoretical literature on exchange rates and macro-

economic adjustment problems of small open economies (cf. Malinvaud, 1981). In the practical discussion in Finland and Sweden, however, this aspect has traditionally been emphasized.

The fact that real exchange rates have shown a tendency to return to the level determined by the underlying inflation differentials may not be very helpful in forecasting the future changes of nominal exchange rates in the horizon of a few months ahead, which is the horizon of a speculator, but it is that neither in the horizon of a few years ahead, which is important e.g. for a firm negotiating a foreign currency loan. Furthermore, even though various measures of the real exchange rate generally move together, there are considerable deviations between them. Therefore no single measure can be taken as an accurate indicator about the degree of overvaluation or undervaluation of the currency and hence as a guide to the decision of the size of the devaluation or the revaluation.

Even though the real effective exchange rates of FIM and SEK have returned more or less to the earlier parities, we do not know whether this is the level they should have returned. In other words, we do not know whether or not there has been a significant real shock affecting permanently the relative competitive position of these countries. At least in the Swedish discussion it has frequently been argued that her competitive position has fundamentally changed because of certain structural changes in the world economy, and that therefore a real depreciation of SEK, i.e. cutting the unit labor costs relative to other countries, is necessary. It is not possible to judge this argument in the light of the data presented in this paper.

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