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Abstract

Conventional wisdom pretends that currency devaluations contributed to the Great Depression of the 1930s. This paper examines the impact of nominal exchange rates on foreign trade of 14 industrialized countries 1929-1939. If the idea of competitive devaluation holds, one should expect an increase in exports, along with a decline in imports, to trading partners against which the exchange rate depreciated. Tests show that the beggar-thy-neighbour effects of exchange rate adjustments were at most marginal. Moreover, there is evidence that currency depreciations were expansionary not only for countries that devalued but for the international economy as a whole.

Keywords: interwar; Europe; exchange rates, trade, depression

JEL codes: N14, F31, E31, E52

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1. Introduction

Now and then, the notion of "competitive devaluations" resurfaces in public debate. They are seen as an evil that contributed to the Depression of the 1930s and which must be shunned in order not to repeat that dark historical experience. However, rarely is the causal mechanism of the "competitive devaluations" discussed, not even in the scholarly literature.[1] Its persistence is highlighted by Crafts and Fearon (2013) who make clear what is now the consensus view, that those countries who in 1931 first left gold recovered more swiftly from the Depression, but nevertheless list "competitive devaluations" among the evils of the Depression (p.2). In the same volume, Forrest Capie traces the disintegration of the international economy between the wars, and states:

> "These countries [the gold bloc] would, however, suffer from the depreciations that had taken place elsewhere, and it was only a matter of two or three years before they abandoned their position, in the process engaging in some 'competitive devaluation' or what later was called 'beggar-thy-neighbour' policies."(Capie 2013, p. 156)

Somewhat closer to a causal mechanism is the treatment in a classic textbook:

> "Thus for any individual country, departure from the gold standard and depreciation of the currency released that country from deflationary constraints and gave a boost to exports. On the other hand, once the same line of action was adopted by many countries, then the benefits formerly reaped by the leaders soon disappeared." (Aldcroft and Morewood 2013, p. 87)

Hence, the argument is that with no need to use monetary policy to target the exchange rate, interest rates can be eased and at the same time the weaker currency makes exports cheaper abroad. It is the latter aspect, as a tool for unfair competition, which gives the pejorative meaning to "competitive devaluation." Moreover, the more countries that let the exchange rate depreciate, the less efficient becomes this tool. The aim of this paper is to test whether and to what extent any "beggar-thy-neighbour" effect was caused by currency depreciation in the 1930s. While this issue has been much discussed and already a contemporary literature questioned the unfair effects of the currency depreciations (Harris 1936; The Royal Institute of International Affairs 1936), an adequate assessment remains. There are good reasons for

[1] An illustrative case is "A Primer on Real Effective Exchange Rates: Determinants, Overvaluation, Trade Flows and Competitive Devaluation" (Chinn 2006), where the latter is not explained at all, just involved as a speculation on how China will respond to a recent, at the time, depreciation of the Japanese yen.

this, since it is problematic to disentangle the role of exchange rates from the plethora of protectionist trade barriers that were raised during the 1930s. Arguably, it was the latter that brought international trade to collapse. Moreover, as shown by Eichengreen and Irwin (2010), there was a trade-off between exchange rate policy and protectionism and "countries that stayed on the gold standard tended to restrict trade more than those that allowed their currencies to depreciate" (p. 894). One might also twist the issue, and argue that the one was intertwined with the other, and protectionism was a retaliatory response to those countries who left the gold standard in 1931 (Albers forthcoming). While Albers admits that currency depreciation was beneficial for recovery he sees it as responsible for a large part of the deterioration of world trade by inviting to protectionist measures among countries that stayed on gold. His argument illustrates the complex nature of the issue, but nevertheless fails to make an adequate assessment by only distinguishing between on-gold or off-gold, and not examining the role of exchange rates.

By use of a newly constructed database on effective exchange rates for Europe (Ljungberg 2019), here extended with the USA (Appendix B), this paper shows that the effects of exchange rate changes on imports and exports of thirteen European countries and the USA during the 1930s was at most marginal. The paper is further a rehabilitation of Ragnar Nurkse, who exposed the expansionary role of currency depreciations for the global economy in the 1930s, and thus anticipated arguments later developed in this Journal, but who undeservingly has been associated with the notion of "competitive devaluation".

The next section shortly reviews contemporary opinions on currency depreciation, mainly as reflected through *The Economist* and *Financial Times*, and connects to Nurkse (1944) and the more recent literature. A following section gives an overview of exchange rate policies, economic growth, and trade among the fourteen countries. One section is devoted to the behaviour of effective exchange rates, another to econometric analyses of the impact of exchange rate changes on trade, before the concluding discussion.

2. Contemporary and recent views

How ran the contemporary argument about competitive devaluation? A fierce critic of currency depreciation was Lionel Robbins. His book *The Great Depression* (1934) traces the collapse of the international economy and the rise of protectionism back to Britain's abandonment of the gold standard, which he characterized "as a catastrophe of the first order of magnitude" (p. 117). Failure to stabilize the pound gave way for competitive depreciation

by the USA and Robbins, writing in the first half of 1934, expected the European continent to follow suit.[2] Robbins saw the overall effect of the depreciations as deflationary, worse than any "domestic contraction" (p. 119), mainly due to the uncertainty created by currency instability but also by reducing the value of assets in the depreciated currency. Additionally, even if the Smoot-Hawley tariff came before, exchange rate changes provoked a diversity of trade restrictions and thus caused international chaos.

Joan Robinson devoted one of the essays in *Essays in the Theory of Employment* (1937), to "beggar-my-neighbour remedies" though she had a broader approach and included both external and internal devaluation as well as protectionist measures:

> "In times of general unemployment a game of beggar-my-neighbour is played between the nations, each one endeavouring to throw a larger share of the burden upon the others. As soon as one succeeds in increasing its trade balance at the expense of the rest, others retaliate, and the total volume of international trade sinks continuously, relatively to the total volume of world activity. Political, strategic and sentimental considerations add fuel to the fire, and the flames of economic nationalism blaze ever higher and higher." (156-7)

A result of the beggar-my-neighbour game, according to Robinson, was "a rise in the rate of interest for the world as a whole and consequently by a decline in world activity" (157). This is a crucial point and, as will be shown below, the opposite argument was made by Nurkse (1944) for a positive interpretation of the currency depreciations.

Even if there was no lack of alarmist overtures, also more balanced views were voiced in the contemporary debate. *The Economist* as well as *Financial Times* were thus restrictive with complaints about competitive depreciation. This might partly be explained by loyalty to the national government and domestic business, but neither were protectionist measures by France or other gold bloc countries blamed for being "beggar-thy-neighbour." "Competitive depreciation" was seen as a threat rather than an actual occurrence.[3] In

[2] "While this very paragraph was being written, there came news of the depreciation of yet another currency. Before it is printed, there may be many more" (Robbins 1934, p. 161). Probably the news were about Czechoslovakia, devaluing in February 1934; the next was Belgium in March 1935, before the big wave in 1936.
[3] Searching for "competitive devaluation/depreciation" gave 25 hits in *The Economist* and 15 in *Financial Times* during 1931-39. For "beggar-my/thy-neighbour" there were 3 hits in *The Economist* and 11 in *Financial Times.* Most hits were in 1933 and 1936 with a total of 11 in each year. Even if there were no concrete pointers, at two instances *The Economist* recognized that competitive depreciation had occurred, with phrases like "it is desirable to guard against a new outbreak of competitive depreciation" (31 Mar 1934, p. 685) and "Sterling below dollar parity means the possibility of a new race for competitive devaluation which is obviously neither in the interest of Britain nor of the United States" (9 Mar 1935, p. 532).

connection with the Imperial Economic Conference in Ottawa 1932, fears were raised by *The Economist's* correspondent about a race of competitive depreciation among the "sterling countries", and these were repeated a year later, after New Zealand had devalued, now including the prospects for the gold bloc to follow.[4] However, in March 1934 *The Economist* in an editorial commenting a proposal for a soon return to gold, endorsed by the International Chamber of Commerce, was cautiously positive to a gold bloc devaluation. A general return to gold might not even be desirable since rigidly fixed exchange rates were seen as something of the past: "A limited power to vary parities may, indeed, be a permanent feature of the new regime."[5]

The Economist cared more about the relation between the pound and the dollar than with the French franc or the Dutch guilder. From 1933, a French devaluation was foreseen but a bigger problem than the currency depreciation was seen in the risk that it "would lead to the Government's overthrow, a swing to the Right and a new Tardieu Ministry – a change which would accelerate throughout Europe the trend towards economic nationalism in a general *sauve qui peut*."[6] It took another three years before the French franc was devalued, and a few months before it actually happened *The Economist* exclaimed, "…"it is to be hoped that the new French Government will recognize the need for the devaluation of the franc, and will carry it out as quickly and smoothly as possible."[7]

It seems clear, however, that there were mutual suspicions between opinions in Britain and the US about unfair manipulations of the currencies. The British were suspected of deliberately using the Exchange Equalisation Account in that purpose. In Britain this was deemed as unwarranted but admittedly self-inflicted due to the Account's lack of transparency. [8] *The Economist* was concerned about the instability of the floating, and depreciating, dollar, and during the World Economic Conference, an editorial vehemently pleaded for the stability of the pound and cooperation with the gold bloc countries. [9] The harshest criticism by *The Economist* was, however, directed towards President Roosevelt whose policy, and in particular the buying up of gold, puzzled *The Economist*: "The main outlines of the policy, however, are still as obscure and the future as unpredictable as ever….

[4] *The Economist,* 6 Aug 1932, p. 261; 23 Sept 1933, p. 569
[5] *The Economist,* 31 Mar 1934, p. 685.
[6] *The Economist,* 1 July 1933, p. 4.
[7] *The Economist,* 16 May 1936, p. 369.
[8] By Arthur Salter, writing in *The Economist* 6 and 13 July 1935. Salter suggested that the Bank for International Settlements (BIS) should manage an equalization fund, an arrangement that in the post-war period came with IMF. Salter also suggested a greater exchange rate flexibility and stated: "Where the alternative is an increase of Bank rate or depreciation, the latter must be chosen"(p. 57).
[9] *The Economist,* 1 July 1933, p. 3.

If the President is committed beyond recall to securing a rise of prices by monetary mean, almost any method would be preferable to this."[10] Later *The Economist* acknowledged the US monetary policy as a lever for the recovery but kept resentments about the dollar depreciation.[11] Judging from the account of Kenneth Mouré (1991), in France the Depression was seen as an outcome of irresponsible economic policy that should not be repeated and first when other means were exhausted the franc was devalued. The French were also aware that the stabilization of the franc in 1928 meant a devaluation of 80 per cent compared with the pre-war parity, which contributed to the self-restraint (Mouré 1991, p. 208, 211-2). The parity to gold was kept until September 1936 and after the Tripartite Agreement with USA and Britain had been negotiated, in an effort to achieve currency stability (Nurkse 1944, p. 131). One could conclude that currency adjustments in the 1930s were not undertaken in an atmosphere of tit-for-tat and when the gold bloc finally resigned in 1935 and 1936, there was a broad understanding of the need for realignments of exchange rates.

The League of Nations published towards the end of the Second World War a study, *International Currency Experience*, largely written by Ragnar Nurkse (here referred to as Nurkse 1944). This study has later been alleged as an exponent of the notion of competitive devaluation (Eichengreen and Sachs 1985, 1986; Eichengreen 1992). Surprisingly enough, because Nurkse actually anticipated the criticism by Eichengreen and Sachs in a quite elaborate way. Even if Nurkse's account is non-formal, its approach is superior to Eichengreen and Sachs's two-country model in having a multilateral perspective. A key argument of Nurkse is that the devaluations increased the price of gold by as much as 70 per cent and, as a consequence, monetary reserves increased, which opened for a monetary expansion that not excluded countries which had not depreciated: "Thus the all-round increase in the price of gold in the various countries, unaccompanied by a corresponding rise in commodity prices, enlarged the supply of international currency irrespective of the expansion in new gold output"(p. 19). Contrary to Joan Robinson's presumption about globally rising interest rates, Nurkse observed the international decline in interest rates as an outcome of the depreciations.

What might confuse is that Nurkse coined the notion about the "devaluation cycle of the 'thirties" and was a proponent of stable exchange rates of the style of Bretton Woods –

[10] *The Economist,* 4 Nov 1933, p. 849.
[11] "The definition of currency honesty is no longer so rigidly drawn as to exclude all readjustments of currencies. But when a rich country, with a strong currency, voluntarily devalues by a very large percentage solely in order to facilitate its internal economic policy, it might be considered a very dangerous precedent and an incitement to the insanity of competitive depreciation" *The Economist,* 3 Oct 1936, p. 18.

pegged but adjustable "in case of chronic and long-term disequilibria in balances of payments" (1944, p.138).[12] Given the undeserved connection with "competitive devaluation" assigned to Nurkse, it is suitable to quote him at some length:

> "At the end of 1936, however, in contrast to 1934 or 1932, exchange relationships between the principal free currencies were not widely different from what they had been in 1930, before the cycle of devaluations had begun. What then, was the significance of this whole cycle? Was any good purpose served by the successive shocks to international currency relations, was there any need for going through such violent disturbances if the outcome in terms of exchange rates differed so little from the starting point?
>
> In contemporary discussion much stress was laid on the competitive aspects of currency devaluation. In many quarters devaluation was regarded primarily as a means of improving a country's foreign trade balance and hence its volume of domestic employment – an effective means but one that operated necessarily at the expense of other countries and invited retaliation.
>
> More recently, empirical studies have suggested a shift in emphasis. It has been shown that countries with depreciated currencies increased their exports mainly to other countries with depreciated currencies. This was a natural result of the expansion of production and money income which accompanied or followed devaluation. In other words, monetary expansion tended to stimulate not only home market activity but also foreign trade of the countries with depreciated currencies *inter se*." (Nurkse 1944, p. 129)

In the quoted paragraph Nurkse emphasizes, as had Harris (1936) before him, the expanding trade between the countries that had left gold, but he laid no less weight on the universal character of devaluation and its effect on monetary reserves. Instead of a devaluation cycle, however, Nurkse would have favoured an early and coordinated expansionary action by the leading industrial nations: "What made the long succession of devaluation inevitable was the fact that monetary expansion was completely uncoordinated in time as well as degree…In default of simultaneous anti-depression measures, successive devaluations leading to monetary expansion were the only practical alternative" (p. 130). Ragnar Nurkse was thus far from the disapproving view of "competitive devaluation", as has been ascribed to him. On the contrary, he anticipated arguments that today has been broadly accepted about the gold

[12] See Eichengreen (1992, p. 22): "Thus the account here differs fundamentally from that of Nurkse (1944) in emphasizing the beneficial effects of the entire round of devaluations that took place in the 1930s, an episode that Nurkse dismisses as a fruitless 'devaluation cycle.'"

standard and the Great Depression and which were pioneered by Eichengreen and Sachs (1985, 1986), Temin (1989) and Eichengreen (1992).

Criticising the notion of competitive devaluation in the 1930s, Eichengreen and Sachs (1985) stress the distinction between protectionism in the field of trade and exchange rate management. While they argue that recovery was promoted in the depreciating countries, primarily due to the easing of restrictions on the domestic credit market, as a consequence there could be no beggar-thy-neighbour effect only if there was also a gold outflow making credit easier abroad. Since they find that "depreciating countries gained rather than lost gold reserves… Currency depreciation, beneficial from the individual country's point of view, was in fact beggar-thy-neighbor" (1985, p. 943). However, this is the result of a model where the world gold stock is *assumed* to be fixed and the gain of one country must be the loss of another. That assumption disregard a key argument of Nurkse, that the value of the gold stock increased both due to the increasing gold price and the rise in gold output "fully comparable to any of nineteenth-century discoveries" (Nurkse 1944, p. 18). Data show that from December 1930 to December 1935, i.e. before the dissolution of the gold bloc, gold reserves of gold bloc countries increased on level with sterling countries, while control countries lagged behind (see Appendix C).

The somewhat ambiguous conclusion by Eichengreen and Sachs is supplemented with a demand for further empirical research. Still this plea has so far gotten no response although Douglas Irwin, in his Ohlin Lectures, stated:

> "For all practical purposes, the notion that countries engaged in competitive devaluation during the 1930s is simply erroneous. In fact, there was only one real example of a competitive devaluation. After New Zealand devalued its currency by 15 percent against the British pound in 1933, Denmark followed with a 17 percent devaluation of the krona." (Irwin 2012 p. 153)

It is not clear however, what qualifies these as competitive. Irwin refers to Straumann (2010, p. 121 ff), who classifies both New Zealand and Denmark as involved in competitive devaluation, although not making clear why some currency depreciation were competitive and other not.[13] All since the Australian pound in early 1931 has settled at 1.30 to the British pound, compared to almost one to one a year before (Ljungberg 2019), devaluation had been debated in New Zealand. Both the Australian and the New Zealand pound followed the

[13] Besides references in the text this paragraph builds on *The Economist* 14, 21, 28 January and 4 February 1933.

British pound after its abandonment of the gold parity, but this maintained New Zealand at a disadvantage vis à vis Australia. A new peg to the British pound was declared on 19 January 1933, and at that day, the Danish krone had resumed its sliding that gently had begun in the summer before. Denmark faced capital flight and a political crisis related to the labour market when the decision about a new peg of the krone was declared on 31 January (Olsen 1968, p. 177). It is difficult to find the significant circumstances that according to Straumann would motivate a beggar-thy-neighbour mark to the Danish devaluation in 1933 in contrast to other European devaluations.

The aim of this paper is to distinguish which countries, if any of the examined fourteen industrial countries, pursued a beggar-thy-neighbour policy with the exchange rate as the tool in the period 1929-1939. If the idea of competitive devaluation holds, one should expect a relative increase in exports, along with a relative decline in imports, to trading partners against which the exchange rate depreciated. This would arguably be the direct effects, while the total volume of trade as well as changes in reserves are more influenced by other factors than changes in the exchange rate.

3. Effective exchange rates

The history of European exchange rates following the exit of the British pound from the gold standard in September 1931 is well known and details are left out here. Broadly, three groups of countries materialized and can be defined according to the open-economy trilemma about the impossibility for a country to combine more than two of the three conditions: fixed exchange rates, open capital markets, and independent monetary policy. Hence countries leaving gold early on (the sterling bloc) combined open capital markets and independent monetary policy; about contemporaneously other countries regulated both capital and current accounts (control countries) while retaining the fixed exchange rate and thereby achieved some policy independence; finally those who stayed on gold (the gold bloc) retained open capital markets and continued to give up an independent monetary policy. However, the differences were not clear-cut, for example, Denmark practically was a member of the informal sterling bloc, but introduced exchange controls in 1931 as did Czechoslovakia, which sometimes is seen as a gold bloc country.[14] Italy was among those who formed the gold

[14] Eichengreen 2008, p. 85. Exchange controls is a broad cover and varied between countries. Czechoslovakia and Denmark did for example not limit foreign debt service (League of Nations 1938).

bloc but became a control country in 1934. United States left gold in 1933, earlier than those in the gold bloc. Yet, in 1936 all in the gold bloc had left the gold parity, and thereby the "devaluation cycle", so labelled by Nurkse, was completed.

However, what is usually overlooked is that a fixed parity with gold or a particular currency is not the same as an effectively fixed exchange rate. The effective exchange rate is defined as an index of a basket of exchange rates, composed by a country's trade partners and weighted according to the size of the trade. Thus, even with a "fixed exchange rate" the effective exchange rate of a currency might change depending on the trade partners. Further, there are the nominal and the real effective exchange rates, below labeled NEER and REER, respectively:

$$NEER_h = \Sigma[(e_{hj}\, m_{hj}) + (e_{hj}\, x_{hj})] \quad (1)$$

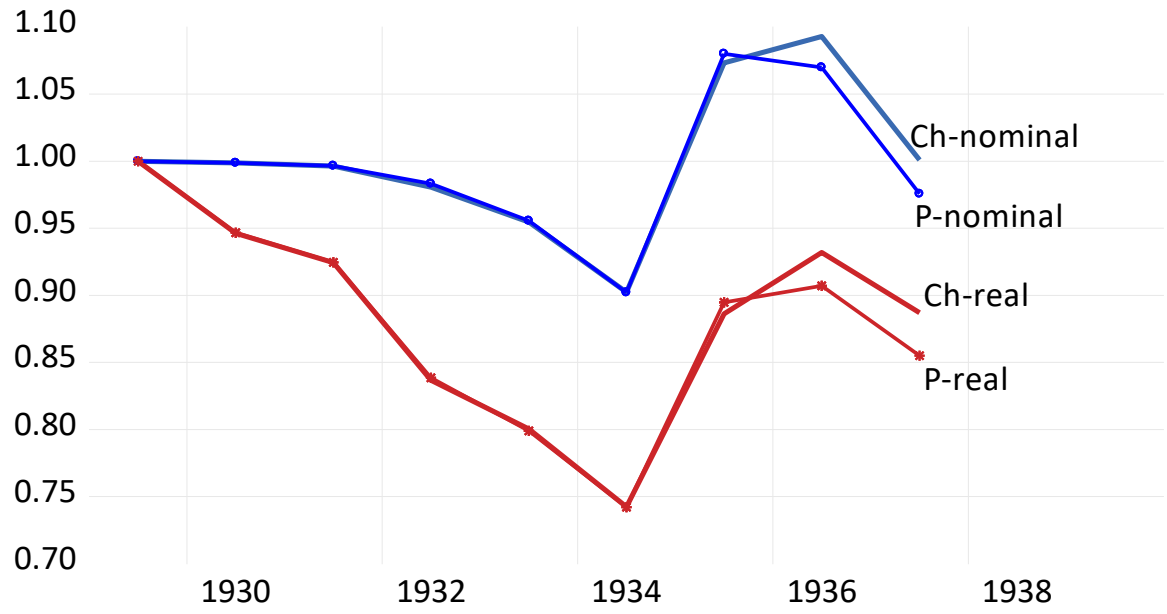
$$REER_h = \Sigma[(e_{hj}\, m_{hj} * p_j / p_h) + (e_{hj}\, x_{hj} * p_j / p_h)] \quad (2)$$

where subscripts denote country *h* and *j* respectively; e_{hj} is the annual change in the exchange rate taken as the amount of country *h's* currency for one unit of country *j's*; *m* is the share of country *h's* imports coming from country *j*; *x* denotes the same for the exports; *p* is the annual changes in the consumer price index. Since the exchange rate is expressed as the number of units of the home currency for one unit of the foreign currency, a depreciation is shown as a rise of the exchange rate, and an appreciation as a fall. The adjustment for relative prices in the calculation of REER is taken as the foreign prices over the domestic prices, and consequently a depreciation of the NEER would be counteracted by a relative rise of domestic prices or reinforced by a relative decline of domestic prices; and the reverse in case of nominal appreciation.

The indices of both nominal and real effective exchange rates shown in figures 1-14 are of two types: Paasche chain indices and Paasche fixed base indices. Usually chain indices are of Laspeyres type, which means that the weights are for the preceding year or a preceding period of years (as the case with the more recent IMF and BIS indices). Arguably Paasche weights, that is, weights for the current year, make more sense since then the measured change in exchange rates pertains to the basket of the actual year in comparison with the base year. For the chain indices, the base year is the preceding year and these indices accurately tell about the annual changes but provide only approximations over longer periods. The Paasche fixed base year indices measure the change in a particular year since 1929 but are not

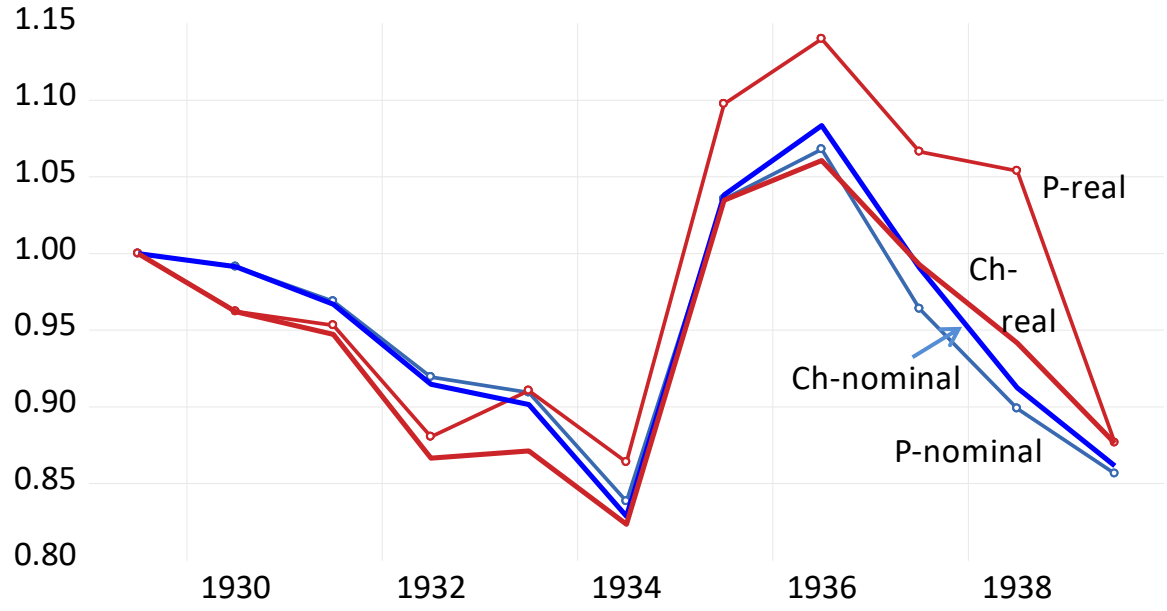
accurate for the annual changes between other years. An implication is that chain indices are less useful for an examination of the development over a period, for example about whether PPP holds or about how the effective exchange rate has changed. For such analyses are the Paasche fixed weight indices more adequate. For some of the countries the difference between the two index types is significant and reflects a "structural change", that is a change in the composition of trade partners. Comments below on changes over the 1930s pertain primarily to the curves of the Paasche fixed base indices.

Figure 1. Nominal and real effective exchange rates for Austria, 1929-1937 (1929=1)



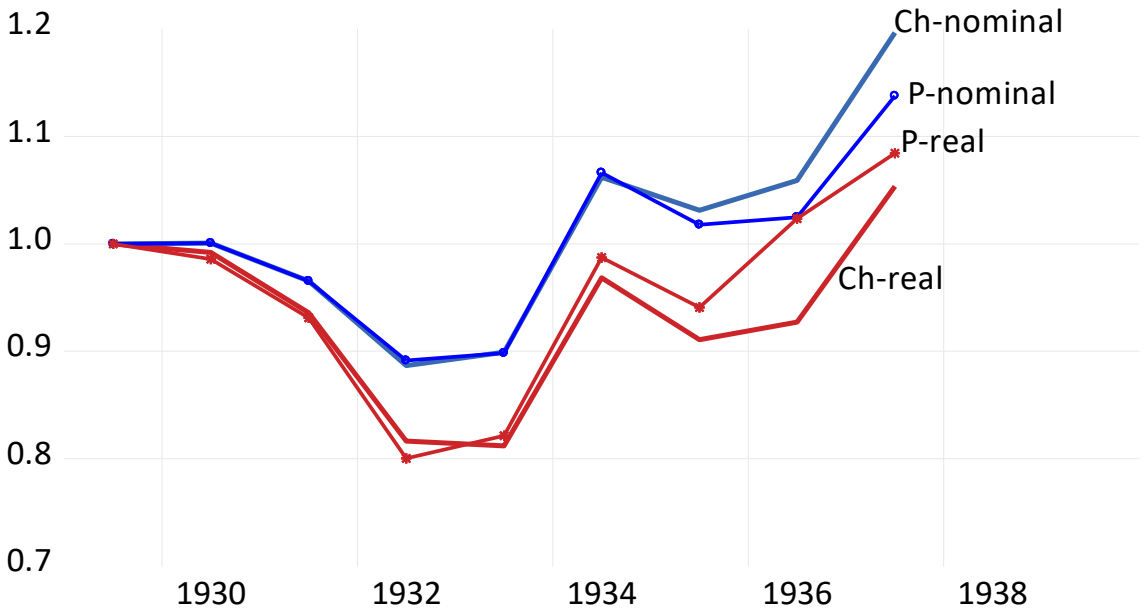
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 2. Nominal and real effective exchange rates for Belgium, 1929-1939 (1929=1)



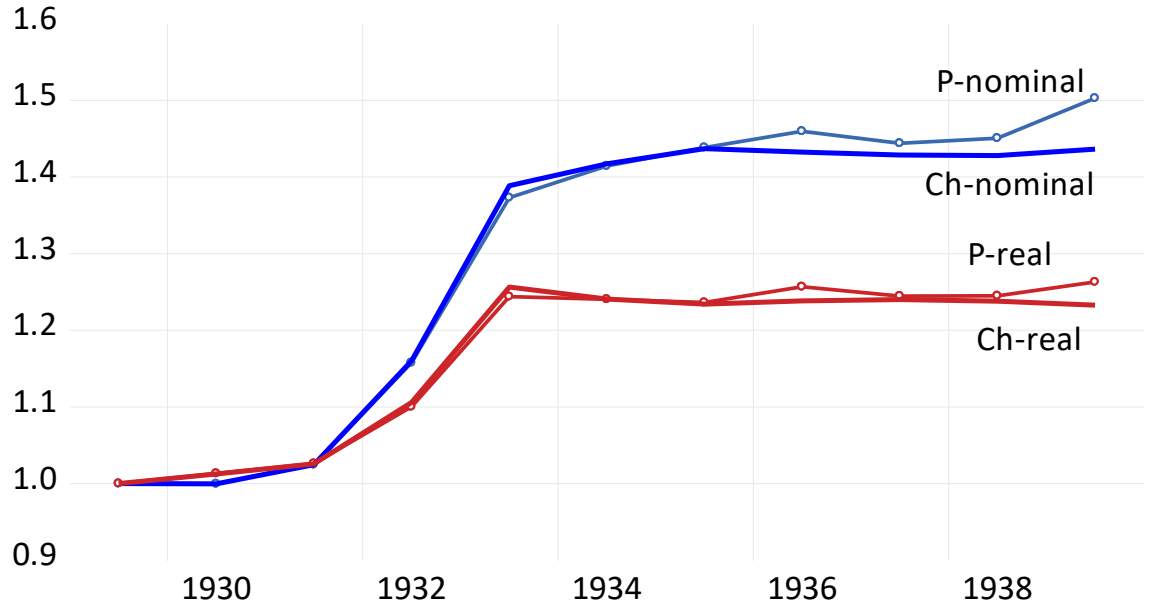
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 3. Nominal and real effective exchange rates for Czechoslovakia, 1929-1937 (1929=1)



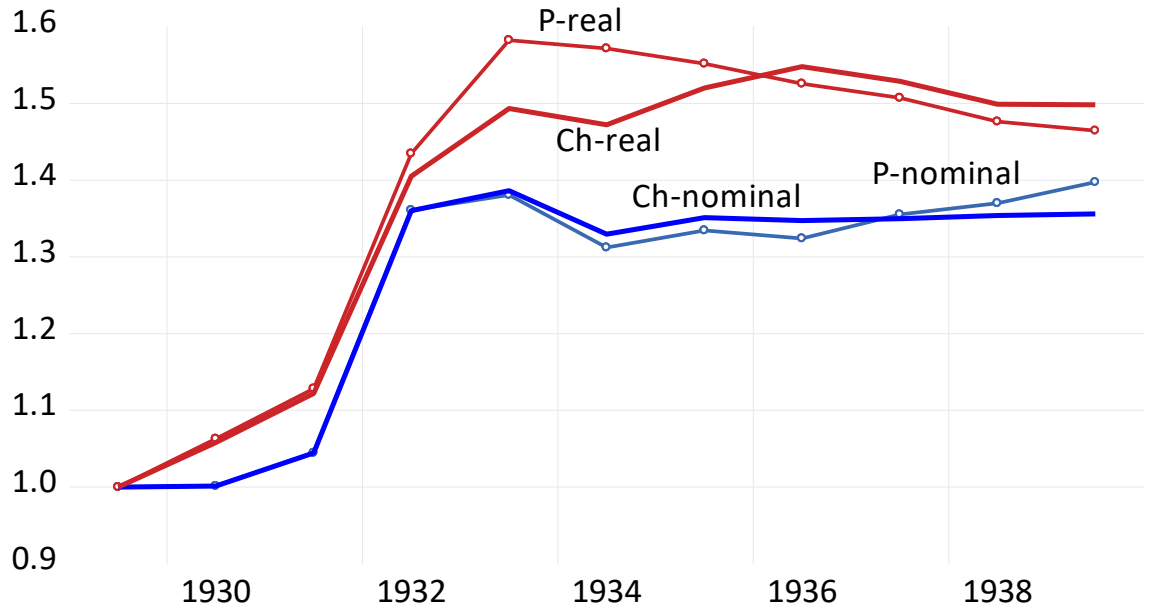
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 4. Nominal and real effective exchange rates for Denmark, 1929-1939 (1929=1)



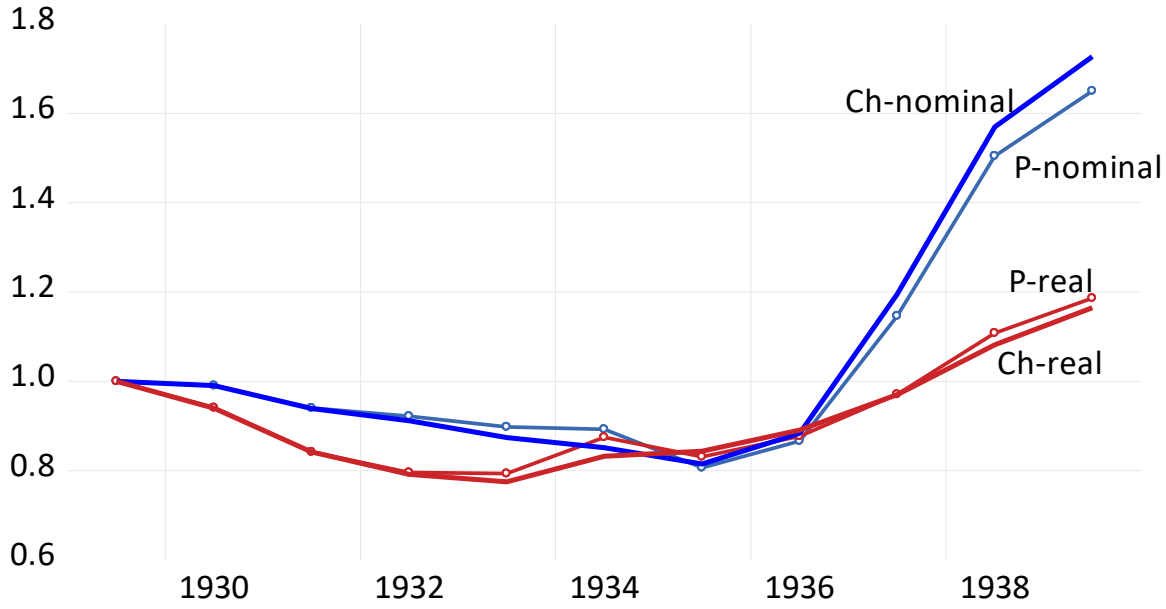
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 5. Nominal and real effective exchange rates for Finland, 1929-1939 (1929=1)



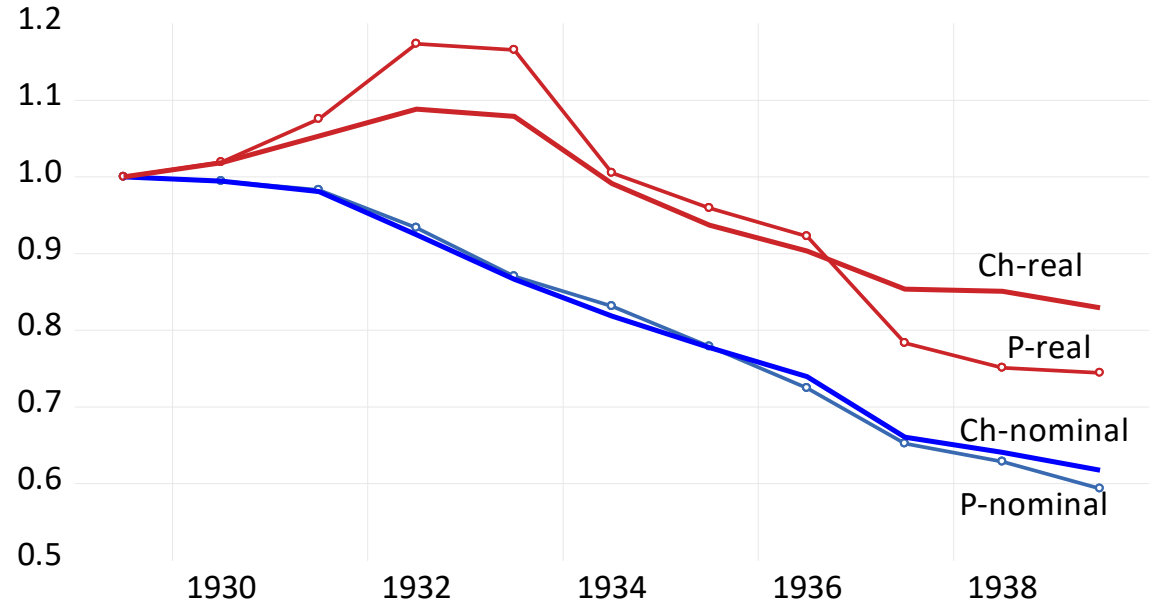
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 6. Nominal and real effective exchange rates for France, 1929-1939 (1929=1)



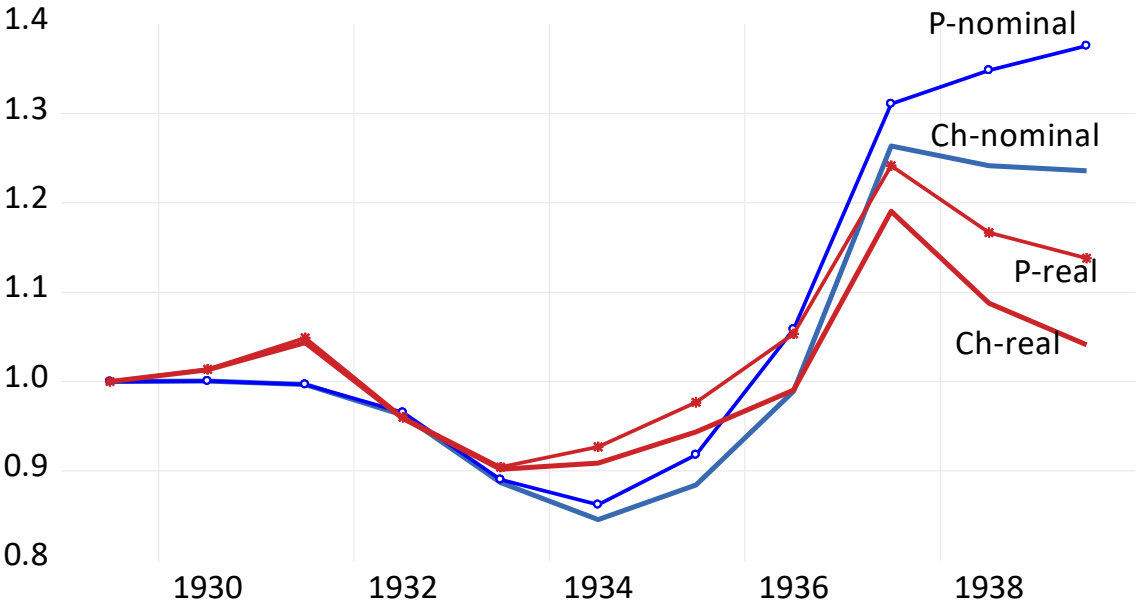
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 7. Nominal and real effective exchange rates for Germany, 1929-1939 (1929=1)



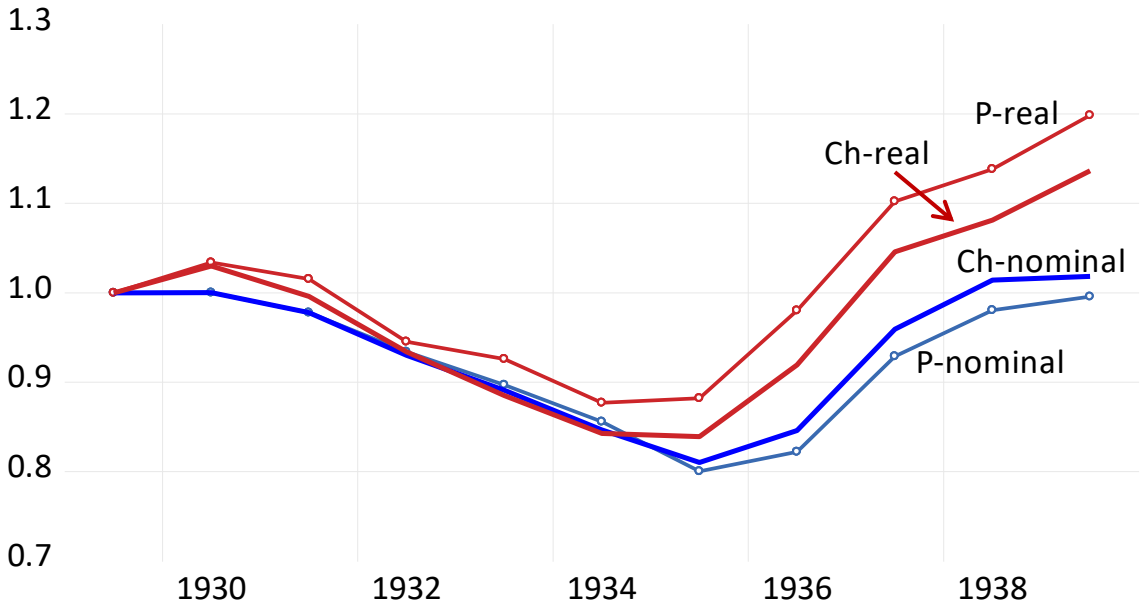
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 8. Nominal and real effective exchange rates for Italy, 1929-1939 (1929=1)



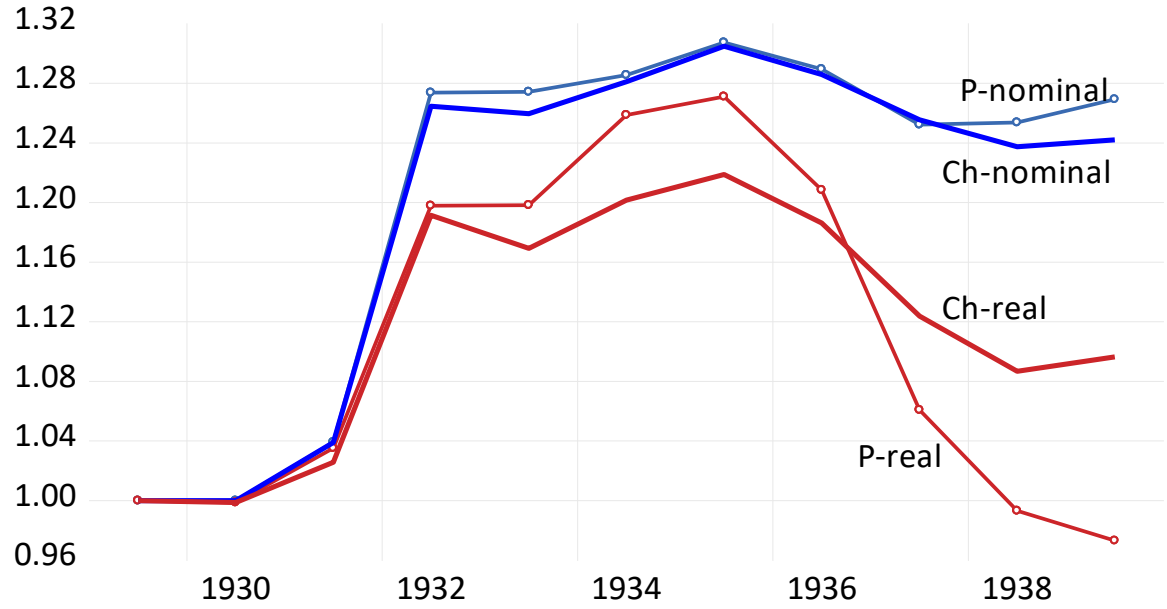
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 9. Nominal and real effective exchange rates for the Netherlands, 1929-1939 (1929=1)



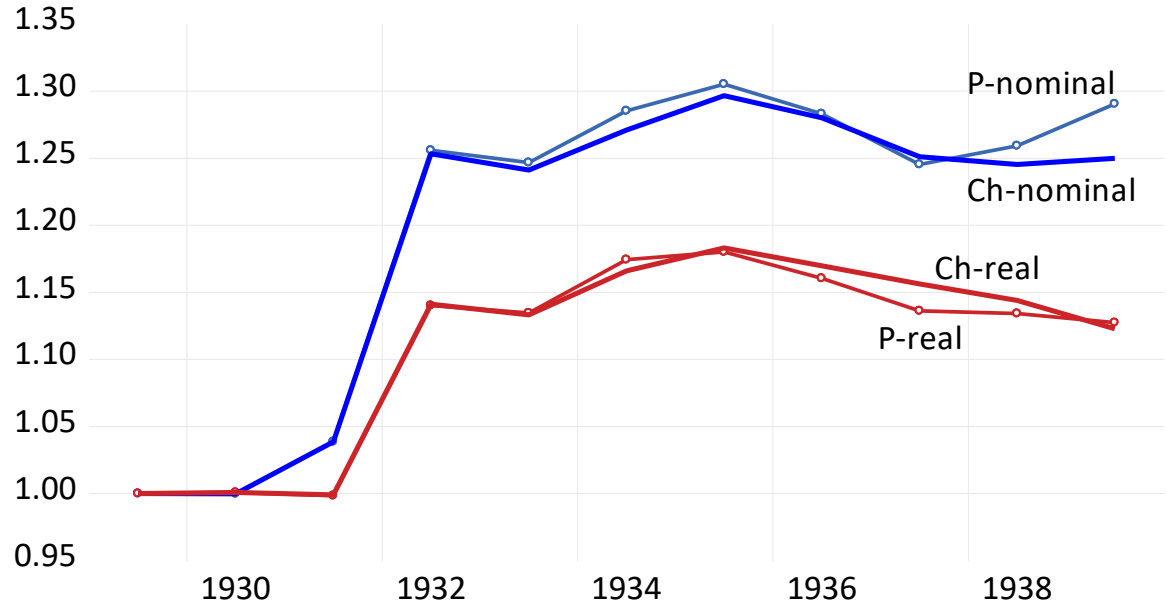
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 10. Nominal and real effective exchange rates for Norway, 1929-1939 (1929=1)



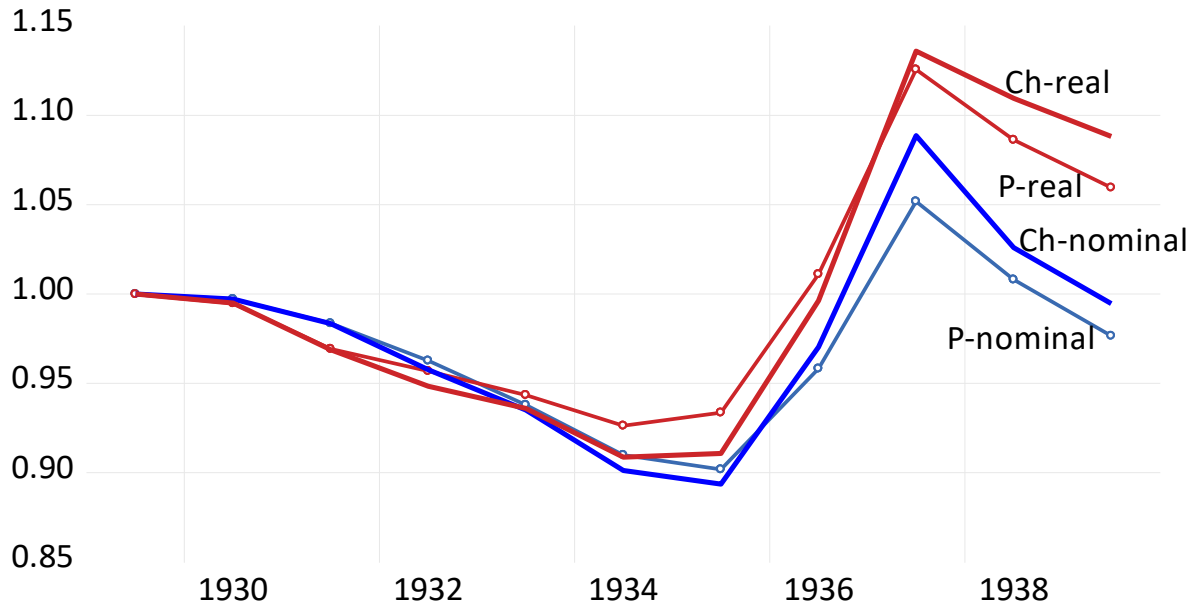
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 11. Nominal and real effective exchange rates for Sweden, 1929-1939 (1929=1)



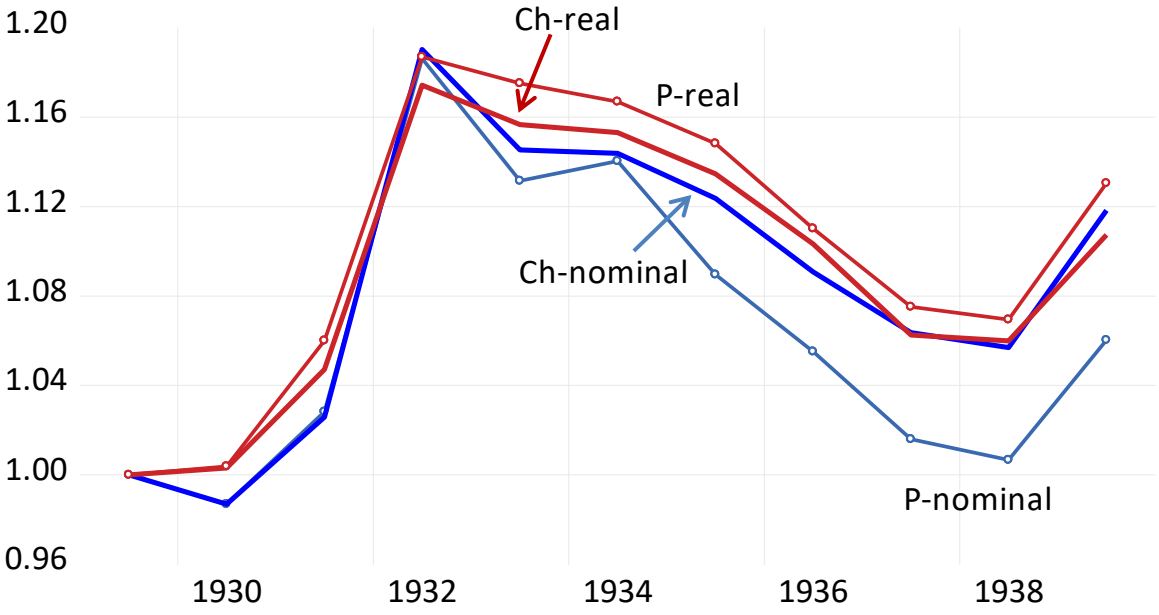
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 12. Nominal and real effective exchange rates for Switzerland, 1929-1939 (1929=1)



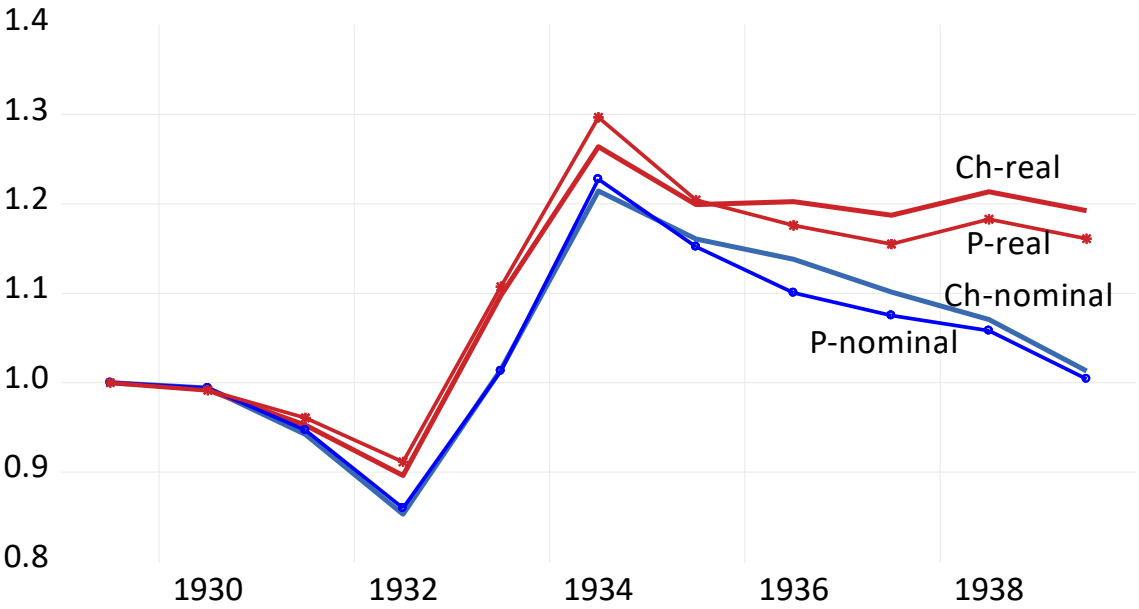
Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 13. Nominal and real effective exchange rates for the United Kingdom, 1929-1939 (1929=1)



Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Figure 14. Nominal and real effective exchange rates for the United States, 1929-1939 (1929=1)



Note: Ch- denotes chain index while P- is Paasche index, see text. Source: Ljungberg (2019).

Effective exchange rates of the sterling bloc depreciated in the early 1930s while those retaining the gold parity appreciated, as illustrated by figures 1-14. In the second half of the 1930s, the former were more or less stable while the bulk of the rest, who had now left gold, depreciated. Thus, Nurkse might have been right considering exchange rates against major currencies when he described the situation in 1936 as back to where it had been in 1930, but missing what had happened to effective exchange rates. Actually, for this group of countries as a whole, the average of effective exchange rates, while stable 1929-1931, from 1932 onwards displayed a steady trend of depreciation. In 1936, the average of NEER had depreciated with 8 per cent and REER with 10 per cent, and continued to depreciate throughout the 30s. It is noticeable that the real effective exchange rates are moving more or less as much as the nominal rates, indicating that the purchasing power parity hypothesis was not matched for these countries in this period (see also Taylor 2002, and Ljungberg 2019).

The different time patterns of exchange rate movements demonstrated in the figures illustrate the division into different currency blocs. The sterling bloc depreciated in the early 1930s and did, with few exceptions, not return to the previous level although most appreciated slightly when the gold bloc had dissolved. This also applies to the REER, implying that the gained competitive advantage could be broadly retained. The exceptions are the UK for which the NEER in 1938 was back to origin, and Norway, for which the REER in 1939 was a few

percentage points below its level of 1929. The United States, which left gold later than the sterling bloc, yet before any in the gold bloc, retained its gain in competitiveness as shown by the stable REER, even though the NEER in 1939 was back to the level of 1929. Among the gold bloc the trajectories of effective exchange rates were dispersed after they abandoned the gold parity. Belgium depreciated about a third in 1935 and 1936, but was in 1939 almost back to its levels of 1934 in both NEER and REER. The Netherlands and Switzerland improved competitiveness after leaving gold in 1936, though not only due to depreciating currencies but also to lower inflation rates than among their respective trade partners. France on the other hand, leaving gold in the autumn 1936, improved competitiveness despite the increasing inflation as shown by the sharper rise of the NEER than in the REER. Among the control countries Germany stand out with a continuous appreciation of both NEER and REER, although the harsh deflation in the early 1930s delayed the start of the REER appreciation until after 1933. Austria was different from Germany, with a stronger REER appreciation until 1934 whereafter the currency depreciation improved competitiveness even though the level of 1929 was not regained. Italy in 1934 turned appreciation to depreciation, although after 1937 more in nominal than real terms.

It is not unreasonable to assume that all this depreciation of both NEER and REER took place at the cost of trade partners. Table 1 indeed suggests that countries, which came late in the devaluation cycle in the 1930s, also were losers in trade and economic growth during the 1930s. Considering the change in trade, volumes have been estimated with respective CPI as a substitute for appropriate export deflators. For imports, CPIs of the main trade partners, weighted according to their respective annual shares, have been used. [15] This of course creates a margin of uncertainty for the trade figures in table 1 but it probably provides an approximation of the comparative pattern. Seen over the whole decade, it is striking how trade volumes followed the division in currency blocs, with the worst performance of the gold and control countries while the sterling countries achieved better. What does not fit the description of beggar-thy-neighbour effects is that most in the former group reduced imports more than exports, while the sterling countries expanded imports more than exports. The United Kingdom being the only sterling country with negative trade growth, yet less so for imports than exports.

[15] For the CPI data, see Ljungberg (2019).

Table 1. Average annual rates of change (per cent) in export, import and GDP

		1929-38			1934-38		
		Export	Import	GDP	Export	Import	GDP
Austria	Control	-7.23*	-8.50*	-2.21*	11.90*	5.22*	3.37*
Germany	Control	-12.27	-12.68	3.53	-1.07	-2.21	7.49
Czechoslovakia	Control	-8.19*	-6.79*	-1.12*	14.23*	18.64*	6.24*
Italy	Gold – Ctrl	-4.70	-4.50	2.10	20.65	13.15	4.10
Belgium	Gold	-1.62	-2.80	0.34	11.51	11.74	1.37
France	Gold	-7.66	-2.83	-0.14	5.42	22.38	2.23
Netherlands	Gold	-4.46	-6.55	0.61	13.79	9.28	3.82
Switzerland	Gold	-2.99	-5.30	0.49	12.31	2.26	2.19
United Kingdom	Sterling	-1.92	-1.21	2.48	2.85	5.17	3.42
Denmark	Sterling	-0.94	1.40	2.01	5.67	4.97	2.40
Finland	Sterling	7.36	5.97	4.56	8.41	15.82	5.62
Norway	Sterling	1.94	3.12	3.24	5.44	12.86	4.79
Sweden	Sterling	2.90	4.15	2.80	9.63	11.60	4.75
United States	Gold – float	-5.38	-6.81	0.68	14.53	15.12	6.08
	Average	*-3.23*	*-3.10*	*0.68*	*9.66*	*10.43*	*4.13*

Note: Fitted trends. * For Austria and Czechoslovakia end year is 1937. *Source:* Calculations on Maddison (2001) and, for Sweden, Schön and Krantz (2012) for GDP growth; imports and exports, calculations on Mitchell (2013) and Ljungberg (2019).

Shifting focus to 1934-38, however, it is clear that exports of the depreciating gold bloc recovered faster than for sterling countries, although their GDP growth was behind. The question is if currency management played a role or if the quotas and tariffs together with economic dynamics explain this pattern.

Nurkse (1944) saw no signs of competitive devaluation in the pattern of trade: "The revival of aggregate demand in certain important markets, rather than any 'exchange dumping', appears to have been one of the central factors governing the movement of trade during the devaluation period. The evidence seems to suggest that any export gains obtained by devaluation at the expense of countries that had not yet devalued were short-lived and relatively unimportant (p. 129-30). Yet, a more systematic econometric testing might answer the question whether beggar-thy-neighbour in the 1930s is a fact or an artefact.

4. Testing for competitive devaluation

One way to examine the occurrence of beggar-thy-neighbour effects from currency depreciation, is to look at the relative export and import elasticities with respect to nominal

exchange rates. Since the bilateral exchange rates of a country move differently towards different currencies, the elasticity should be measured on the distribution of trade between trade partners. By taking trade shares, we also separate from the growth or decline of the total trade, which arguably was more influenced by other factors. The expectation would be that export shares increase and import shares decrease with a depreciating exchange rate, and the reverse with a currency appreciation. Since the trade shares consider export and import with main trade partners, the exchange rates consider the bilateral exchange rates with the same trade partners. The estimations are performed with the following equation:

$$Ln(EXPORTSHARE_t) = \alpha + \beta_1 Ln(NER_{t-1}) + \beta_2 Ln(IMPORTSHARE_{t-1}) + \gamma_1 + \gamma_2 + \varepsilon \quad (3)$$

where *Ln* denotes natural logarithm; *EXPORTSHARE* is the share (in current prices of the exporting country) taken by main trade partners in a stacked panel; *NER* is the annual changes in the bilateral nominal exchange rate to the country in question, and *IMPORTSHARE* is the share (in current prices of the importing country) of imports from the trade partners in a matching panel. Both *NER* and *IMPORTSHARE* are for the year before, since the effects are assumed to come with a lag. *IMPORTSHARE* controls for the economic dynamics of the trade partners as well as for path dependency in the pattern of trade. Similar equations are run with the *IMPORTSHARE* at the left hand side, and the lagged *NER* and *EXPORTSHARE* as independent variables. Trade partners for each country are listed in appendix A. Bilateral exchange rates are taken as cross rates with the British pound calculated from monthly close rates in *Global Financial Data* (GFD) and trade data are from Mitchell (2013), all more in detail discussed in Ljungberg (2019). To account for different levels of countries' trade shares, country fixed effects are applied, denoted with γ_1 ; while idiosyncrasies of different years are captured by period fixed effects γ_2, and ε is the residual. If the exchange rate *NER* is positively correlated with the *EXPORTSHARE*, then exports have been boosted by a depreciating currency. However, a robust beggar-thy-neighbour effect would also be shown by a negative correlation between *NER* and the *IMPORTSHARE*.

Table 2. Export shares regressed on lagged exchange rates and import shares in a panel, 1930-39

Fixed country and period effects	NER_{t-1}	$Mshare_{t-1}$	*Dummy 1*	*Dummy 2*	$Adj.R^2$ *P(F-stat)*	*Observations*
Austria	0.366 (0.147)	0.214 (0.146)			0.90 (0.000)	72 (1930-37)
Belgium	-0.195 (0.657)	0.684*** (0.000)			0.92 (0.000)	80
Belgium Dummy Russia 32	-0.038 (0.926)	0.630*** (0.000)	-1.144*** (0.001)		0.93 (0.000)	80
Czechoslovakia	0.076 (0.859)	0.217 (0.149)			0.86 (0.000)	64 (1930-37)
Czechoslovakia Dummy Russia 34	0.427 (0.262)	0.287** (0.029)	-1.372 (0.000)		0.90 (0.000)	
Denmark	0.462 (0.355)	-0.176 (0.212)			0.97 (0.000)	60
Denmark Dummy France 37	0.545 (0.213)	-0.334** (0.012)	-1.114*** (0.000)		0.98 (0.000)	
Finland	0.744 (0.474)	0.389* (0.087)			0.88 (0.000)	50
Finland Dummy Russia 30	0.606 (0.466)	0.561*** (0.004)	1.967*** (0.000)		0.92 (0.000)	50
France	0.315 (0.259)	0.688*** (0.000)			0.92 (0.000)	90
France Dummy Italy 36; Sweden 39	0.281 (0.225)	0.658*** (0.000)	-1.101*** (0.000)	0.893*** (0.001)	0.94 (0.000)	90
Germany	0.993*** (0.001)	0.653*** (0.000)			0.84 (0.000)	140
Germany Dummy Russia 32	0.940*** (0.000)	0.609*** (0.000)	1.406*** (0.000)		0.87 (0.000)	140
Italy	0.891** (0.037)	0.323*** (0.001)			0.80 (0.000)	58
Italy Dummy UK 36	0.837** (0.018)	0.331*** (0.000)	-1.139*** (0.000)		0.86 (0.000)	58
Netherlands	-0.523 (0.408)	0.374 (0.151)			0.87 (0.000)	80
Netherlands Dummy Soviet 30, 31	-0.515 (0.258)	0.003 (0.987)	-1.730*** (0.000)	1.649*** (0.000)	0.90 (0.000)	80
Norway	-0.010 (0.966)	0.039 (0.632)			0.98 (0.000)	80

Sweden	0.595** (0.026)	0.323** (0.022)			0.92 (0.000)	80
Switzerland	0.741** (0.012)	0.048 (0.826)			0.92 (0.000)	59
United Kingdom	0.719** (0.030)	0.218** (0.028)			0.79 (0.000)	160
United Kingdom Dummy NZ 35; IT 36	0.678*** (0.002)	0.192*** (0.003)	1.796*** (0.000)	-2.648*** (0.000)	0.91 (0.000)	160
United States	0.099 (0.450)	0.579*** (0.000)			0.92 (0.000)	178
United States Dummy Brazil 37	0.147 (0.181)	0.637*** (0.000)	-3.037*** (0.000)		0.95 (0.000)	178

Note: Probability in parentheses; * for stat. significance at 10% level, ** for 5% level and *** for 1% level.

Table 2 shows the results with the export shares as dependent variable. For some countries, outliers occur in the residuals, and when the addition of at most two dummy variables for the biggest outliers has improved or provided statistical significance for the coefficients, this is reported with an additional line. While ten of the fourteen countries show a clear influence of the imports in the previous year on the distribution of exports, only five countries show an impact of the exchange rate changes. Germany is one of these five. However, given the steady appreciation of its effective exchange rate and the drastic decline of Germany's foreign trade, it is rather an indication that exports declined more to countries against which the mark appreciated the most, than the reverse. Even if this means that Germany could be seen as a "victim" of competitive devaluation, to make sense it should also be possible to identify some "culprits", that is, countries who limited imports precisely due to currency depreciation. One would expect to find the suspects among those who at an early stage entered the "devaluation cycle", and we will see when we turn to the import side. On the export side reported in table 2, we find Italy and Switzerland among those few with statistical significance for the exchange rate changes, who depreciated in the latter half of the 1930s. The beggar-thy-neighbour effect for Italy is, however, weakened because its imports declined less than its exports. Also Switzerland is ambiguous even if its import declined more than exports, but one should note, that the Swiss franc effectively depreciated only in 1936 and 1937, while appreciating in the other years with the result that the franc in 1939 was two percentage points stronger than in 1930 (see figure 12). By dividing the equations for Switzerland into one for 1930-35 and another for 1936-39, the suspicions about a Swiss beggar-thy-neighbour behaviour are further weakened. Only for the first period, when the Swiss franc appreciated,

does the coefficient for exchange rate changes retain any statistical significance, implying that it was a reverse effect: exports declined more to countries against which the franc appreciated. Stronger support for a beggar-thy-neighbour effect is shown by Sweden and the United Kingdom. Sweden also increased its total exports, even if imports grew faster. United Kingdom is slightly ambiguous since its exports declined, and did more so than its imports, as could be seen in table 1. A check on the robustness of the limited indications for a beggar-thy-neighbour effect is the corresponding tests of the import shares.

In Table 3, *IMPORTSHARE* is the dependent variable, and with statistical significance of the lagged *EXPORTSHARE* for twelve of the fourteen countries the most striking result is the persistence of trade patterns. Five countries show an impact from the exchange rate, however, for all five the sign is not the expected and instead of constraining, currency depreciation would have boosted their imports. The "culprits" in the case of the shrinking German exports could thus not be identified. On the contrary, it seems that it was the same depreciating countries that lost relatively most of the German imports, pointing to deteriorating trade relations in both exports and imports. Interestingly, Denmark is among the five which makes this country's alleged involvement in the "only" competitive devaluation (Straumann 2010; Irwin 2012) less plausible. Another country with indications on the export side is Switzerland, but like Denmark and Germany, it shows a positive correlation between currency depreciation and imports and thus rebuts the suspicions about a beggar-thy-neighbour behaviour. The two remaining countries with a positive correlation between depreciation and imports are France and the United States, none of which had any statistical significance for the exchange rate on the export side.

Table 3. Import shares regressed on lagged exchange rates and export shares in a panel, 1930-39

Fixed country effects Fixed period effects	NER_{t-1}	$Xshare_{t-1}$	*Dummy 1*	*Dummy 2*	$Adj.R^2$ *P(F-stat)*	*Observations*
Austria	0.136 (0.559)	0.036 (0.754)			0.91 (0.000)	72 (1930-37)
Belgium	0.009 (0.971)	0.112* (0.095)			0.91 (0.000)	80
Belgium Dummy Soviet 39	0.103 (0.631)	0.242*** (0.000)	-1.020*** (0.000)		0.95 (0.000)	80
Czechoslovakia	-0.434 (0.265)	0.307** (0.023)			0.89 (0.000)	64 (1930-37)
Czechoslovakia	-0.399	0.429***	-1.112***		0.91	64

Dummy Hungary 31	(0.251)	(0.001)	(0.001)		(0.000)	(1930-37)
Denmark	1.129** (0.021)	0.049 (0.769)			0.92 (0.000)	60
Denmark Dummy UK 30	1.130** (0.011)	0.029 (0.850)	-1.032*** (0.002)		0.93 (0.000)	60
Finland	-0.024 (0.970)	0.555*** (0.000)			0.89 (0.000)	50
France	0.249 (0.481)	0.657*** (0.000)			0.88 (0.000)	90
France Dummy Italy 36, Spain 39	0.458* (0.082)	0.558*** (0.000)	-1.013*** (0.000)	-1.923*** (0.000)	0.94 (0.000)	90
Germany	0.075 (0.776)	0.650*** (0.000)			0.83 (0.000)	140
Germany Dummy Soviet 35, 38	0.412* (0.082)	0.688*** (0.000)	1.163*** (0.000)	-0.951*** (0.000)	0.87 (0.000)	140
Italy	0.666 (0.322)	0.824*** (0.001)			0.71 (0.000)	58
Italy Dummy Austria 36, UK 36	0.531 (0.211)	0.855*** (0.000)	0.866*** (0.010)	-2.174*** (0.000)	0.89 (0.000)	58
Netherlands	-0.133 (0.685)	-0.050 (0.376)			0.97 (0.000)	80
Norway	0.019 (0.958)	0.127 (0.535)			0.90 (0.000)	80
Sweden	0.058 (0.795)	0.314*** (0.007)			0.97 (0.000)	80
Switzerland	0.520*** (0.006)	-0.187* (0.068)			0.98 (0.000)	59
United Kingdom	-0.057 (0.852)	0.161** (0.040)			0.88 (0.000)	160
United Kingdom Dummy NZ 35; IT 36	0.009 (0.966)	0.112** (0.038)	-2.317*** (0.000)	-1.394*** (0.000)	0.95 (0.000)	160
United States	0.221 (0.135)	0.423*** (0.000)			0.90 (0.000)	178
United States Dummy Brazil 37	0.260** (0.033)	0.518*** (0.000)	-3.560*** (0.000)		0.93 (0.000)	178

Note: Probability in parentheses; * for stat. significance at 10% level, ** for 5% level and *** for 1% level.

As seen from table 1, the trade of both countries declined substantially over the 1930s but the bottom was reached in 1934 by United States, and in 1935 by France. In particular the French

imports rocketed, along with currency depreciation and a change from deflation to double-digit inflation in 1937 and 1938. This is also manifest in strong statistical significance for the exchange rate coefficient, when the equation for France is limited to 1935-1939. In the US case exports recovered faster than imports and it was a perverse or unexpected reaction to the dollar depreciation that seems to determine the result on the import side.[16] Hence, far from corroborating the few indications of beggar-thy-neighbour effects that was found on the export side, the result for the import side sheds more doubts on the conventional view on competitive devaluations in the 1930s.

One could, however, object that a decade is a long period and when countries depreciated, the beggar-thy-neighbour effect was only temporary and might therefore not show up in these tests. A second version of the test is therefore performed, as a "cross-section panel", that is, one equation is run for each year. In matrix form the fourteen countries are in the columns and their respective trade partners appear on the rows. The trade partners correspond to period or dates in a time series panel, and since trade partners differ between countries, "period fixed effects" would make no sense and only country fixed effects are applied. All variables are taken as logged first differences, and the right hand side is still pertaining to the preceding year. Equation (3) is thus only slightly modified, and similarly run in two versions letting *EXPORTSHARE* and *IMPORTSHARE* change places:

$$Ln(EXPORTSHARE_t) = \alpha + \beta_1 Ln(NER_{t-1}) + \beta_2 Ln(IMPORTSHARE_{t-1}) + \gamma_1 + \varepsilon \quad (4)$$

Table 4 reports the result with *EXPORTSHARE* as the dependent variable. Seen from this angle there is indeed statistically significant influence from the exchange rate on the distribution of exports. However, it is noteworthy that the strongest elasticity is displayed for 1931, reacting on changes in 1930 before the devaluation cycle had begun among the industrialized countries. After adjusting for the two biggest outliers in the residuals, both 1932 and 1933 show statistical significance for the exchange rate coefficients. Then the effect dissipates and for 1935 even becomes negative, but reappears for 1939, after the completion of the devaluation cycle.

[16] The strongest statistical significance for the exchange rate coefficient (P=0.0015), without adjustment for outliers, is received for 1933-38. The US Department of Commerce (1934, p. 9; as cited in Nurkse 1944, p. 120), noticed the growth in imports 1933 despite a weaker dollar and explained it with "the distinction between a depreciating and a depreciated currency", that is, traders anticipated a further weakening of the dollar.

Table 4. Change in exports to main trade partners regressed on change in bilateral exchange rates and imports in the preceding year

	NER_{t-1}	$Mshare_{t-1}$	*Outlier Dummy 1*	*Outlier Dummy 2*	$Adj.R^2$ *P(F-stat)*	*Observations*
1931	1.955**	0.514***			0.09	130
	(0.032)	(0.004)			(0.036)	
1931	2.179***	0.166	-1.050***	3.293***	0.69	130
	(0.000)	(0.114)	(0.000)	(0.000)	(0.000)	
1932	0.626	-0.132			-0.03	130
	(0.172)	(0.404)			(0.727)	
1932	0.876***	0.090	-2.494***	-1.883***	0.53	130
	(0.006)	(0.414)	(0.000)	(0.000)	(0.000)	
1933	0.027	0.026			0.04	130
	(0.852)	(0.742)			(0.196)	
1933	0.284**	0.054	-1.065***	-0.915***	0.28	130
	(0.043)	(0.446)	(0.000)	(0.000)	(0.000)	
1934	-0.075	0.297***			0.05	130
	(0.741)	(0.009)			(0.121)	
1934	-0.165	0.251***	-0.954***	1.329***	0.32	130
	(0.398)	(0.009)	(0.000)	(0.000)	(0.000)	
1935	-0.322	0.154			0.02	130
	(0.178)	(0.228)			(0.272)	
1935	-0.389**	0.178*	1.119***	2.032**	0.55	130
	(0.018)	(0.041)	(0.000)	(0.000)	(0.000)	
1936	0.059	0.547***			0.16	129
	(0.889)	(0.000)			(0.002)	
1936	-0.006	0.521***	-1.459***	-2.448***	0.61	129
	(0.984)	(0.000)	(0.000)	(0.000)	(0.000)	
1937	-0.442	-0.253**			-0.03	129
	(0.369)	(0.017)			(0.712)	
1937	0.019	-0.117*	1.763***	-3.497***	0.66	129
	(0.946)	(0.068)	(0.000)	(0.000)	(0.000)	
1938	-0.131	0.083			0.10	108
	(0.254)	(0.370)			(0.036)	
1938	-0.037	-0.012	-1.187***	0.863***	0.35	108
	(0.708)	(0.885)	(0.000)	(0.000)	(0.000)	
1939	0.352	0.314**			0.09	105
	(0.182)	(0.010)			(0.050)	
1939	0.400*	0.251**	-1.185***	-0.884	0.36	105
	(0.072)	(0.017)	(0.000)	(0.000)	(0.000)	

Note: Probability in parentheses; * for stat. significance at 10% level, ** for 5% level and *** for 1% level.

For the import side, table 5 reports statistically significant results only for 1934. For exports and imports combined, the indications on beggar-thy-neighbour effects are not overwhelming.

Table 5. Change in imports to main trade partners regressed on change in bilateral exchange rates and exports in the preceding year

	NER_{t-1}	$Xshare_{t-1}$	*Outlier Dummy 1*	*Outlier Dummy 2*	$Adj.R^2$ *P(F-stat)*	*Observations*
1931	0.237	0.202*			0.03	130
	(0.666)	(0.054)			(0.214)	
1931	0.287	0.170**	-1.668***		0.47	130
	(0.480)	(0.029)	(0.000)		(0.000)	
1932	-0.709**	-0.038			-0.05	130
	(0.038)	(0.567)			(0.860)	
1932	-0.340	-0.082	1.053***	-1.462***	0.30	130
	(0.231)	(0.140)	(0.000)	(0.000)	(0.000)	
1933	-0.201	0.018			0.31	130
	(0.184)	(0.764)			(0.000)	
1933	-0.211	0.025	0.897***	0.940***	0.48	130
	(0.110)	(0.642)	(0.000)	(0.000)	(0.000)	
1934	-0.379**	0.134			0.05	130
	(0.031)	(0.102)			(0.117)	
1934	-0.369**	0.133*	0.686***	-0.885	0.26	130
	(0.018)	(0.068)	(0.000)	(0.000)	(0.000)	
1935	-0.200	0.078			-0.06	130
	(0.410)	(0.427)			(0.922)	
1935	-0.156	0.052	-2.469***	0.691***	0.64	130
	(0.278)	(0.370)	(0.000)	(0.000)	(0.000)	
1936	-0.037	0.713***			0.22	130
	(0.928)	(0.000)			(0.000)	
1936	-0.149	0.630***	-1.172***	-2.111**	0.52	130
	(0.637)	(0.000)	(0.000)	(0.000)	(0.000)	
1937	0.282	-0.312***			-0.03	129
	(0.556)	(0.003)			(0.704)	
1937	0.264	-0.225***	1.406***	-3.721***	0.75	129
	(0.275)	(0.000)	(0.000)	(0.000)	(0.000)	
1938	-0.056	-0.027			0.30	108
	(0.517)	(0.694)			(0.000)	
1938	-0.090	0.010	-0.737***	-0.734***	0.42	108
	(0.263)	(0.870)	(0.002)	(0.000)	(0.000)	
1939	-0.055	0.246***			0.46	105
	(0.812)	(0.009)			(0.000)	
1939	-0.020	0.224***	-1.018***	-0.806***	0.62	105
	(0.918)	(0.005)	(0.000)	(0.000)	(0.000)	

Note: Probability in parentheses; * for stat. significance at 10% level, ** for 5% level and *** for 1% level.

However, to get an idea of the magnitude of the effects the elasticities would be combined with the actual changes of the exchange rates. This is done in table 6 where the statistically significant coefficients for exchange rate changes in the preceding year are multiplied with the

exchange rate changes in the same year. The latter are estimated as the weighted average of the nominal effective exchange rate changes, and the weights are the countries' shares in the total exports and imports, respectively, of the fourteen countries. The trade partners, on which the effective exchange rates and elasticities are calculated, include thirty different countries, thus a larger group than the sample of fourteen. Due to the different trade relationships in exports and imports, the changes in effective exchange rates differ between exports and imports. For example, for year 1933 in table 6, considering exchange rate changes in the year before, in export markets the average appreciation was 0.24 per cent while in import markets there was a 2.24 per cent depreciation. The impact of these exchange rate changes is then estimated on the sample's global trade and not just their trade with each other.

Table 6. Estimated effects from exchange rate changes on trade of 14 countries

	Exports			Imports		
	β_1	Per cent Σ $NEER_{xt-1}$	β_1 x Σ $NEER_{xt-1}$	β_1	Per cent Σ $NEER_{mt-1}$	β_1 x Σ $NEER_{mt-1}$
1931	2.179	-0.65	-1.42	*Not sign.*	-0.70	--
1932	0.876	-1.69	-1.48	*Not sign.*	-0.61	--
1933	0.284	-0.24	-0.07	*Not sign.*	2.24	--
1934	*Not sign.*	1.81	--	-0.369	0.36	-0.32
1935	-0.389	1.90	-0.74	*Not sign.*	1.02	--
1936	*Not sign.*	-1.20	--	*Not sign.*	-0.84	--
1937	*Not sign.*	-0.26	--	*Not sign.*	-0.22	--
1938	*Not sign.*	1.32	--	*Not sign.*	1.94	--
1939	0.400	-0.18	-0.07	*Not sign.*	0.09	--

Note: β_1 are from tables 4 and 5; $NEER_{xt-1}$ (and $NEER_{mt-1}$) is the percentage change of effective exchange rates (chain index), weighted with respective country share in total exports (and imports) of the 14 countries, calculated on Ljungberg (2019), for USA see appendix B, and trade data from Mitchell (2013).

When the elasticity coefficients are statistically not significant, the impact on trade is assumed to be naught and the corresponding cells in table 6 are left empty. The largest impact is found in 1931 and 1932, with a reduction of exports among the fourteen countries with 1.4 and 1.5 per cent, respectively. A reduction of exports with 0.7 per cent in 1935 was due to a negative elasticity and a close to two per cent depreciation. On imports, only in 1934 is there a significant impact, with a reduction of 0.3 per cent. In the following years the impact was marginal or not discernible despite often larger changes in exchange rates. All in all, these estimates show that the effects of exchange rate changes were at most marginal. The higher

mutual correlation between exports and imports suggests that patterns of trade, whether determined by protectionist trade barriers or economic dynamics were of larger importance.

5. Concluding discussion

Only very weak, if any, effect of exchange rate changes could be found on the distribution of trade during the 1930s, through the estimation of trade elasticities for fourteen industrialized countries. None of the countries had a persistent gain from currency depreciation, while a few had losses from their currency appreciation. The latter applies in particular to Germany, but the biggest decline in German exports was not to countries with depreciating currencies – why there was a "victim" but no "culprit" of competitive devaluation. An examination of the effects of exchange rate changes year by year showed very marginal effects in the early 1930s and in 1939. The highest elasticity was shown for exports in 1931 on exchange rate changes in 1930. Since the exchange rate changes were small in 1930, the effect on trade was still marginal.

The result seems counter-intuitive. Were markets really insensitive to price changes, which would be implied by the changes in exchange rates? The question is beyond the scope of this paper, yet a conjectural explanation might be sketched. In the 1980s, with large swings in the US dollar, Paul Krugman drew attention to the small effects on trade volumes and suggested:

> "When the exchange rate is highly volatile, firms are more likely to regard its movements as temporary, so that regressive expectations reduce their response; and even if they do not have regressive expectations, exchange-rate volatility gives them an incentive to adopt a "wait and see" policy that does not respond quickly to exchange-rate changes." (Krugman 1989, p. 54)

The "wait and see" policy is quite rational since, as Krugman shows, the anticipated losses of an unfavourable change in the exchange rate would not be greater, while the profits in case of a favourable change would be greater, if a firm delays its entry or exit in the market. The high elasticity found for exports in 1931 might show the sensitivity during circumstances of relative exchange rate stability. Later, when volatility in exchange rates magnified, the sensitivity declined and even became insignificant.

Paradoxically, uncertainty about exchange rates would not have contributed to the slump in international trade. Rising tariffs, import quotas, and bilateral agreements as well as

the general decline in economic activity, were rather the causes. The insignificant beggar-thy-neighbour effects show that the "evils of competitive devaluation" in the 1930s is a myth. Unfortunately, the myth has concealed the expansionary effects currency depreciation had on the international economy, so much emphasized by Ragnar Nurkse. This effect was due to the "practically universal" (Nurkse 1944, p. 18) devaluation in terms of gold, which increased the monetary reserves. As mentioned, later authors have highlighted this effect but only for individual countries leaving some ambiguity about the myth. However, the argument of Christina Romer (1992) in this Journal, that the gold inflow to the US ended the Great Depression, could be well placed in the larger context of currency depreciations.

A corollary to the myth of competitive devaluations in the 1930s is that there was a kind of tit-for-tat warfare in the field of exchange rates. Although far from exhaustive and inviting to further research, my examination of the contemporary discourse, mainly as reflected in *The Economist* and *Financial Times*, indicates rather a desire for exchange rate stability than a wish to give back.

References

Albers, Thilo N.H. "Currency devaluations and beggar-my-neighbour penalties: evidence from the 1930s", *Economic History Review,* forthcoming (2020).

Aldcroft, Derek H. and Morewood, S. *The European Economy Since 1914. Fifth Edition,* London: Routledge, 2013.

Capie, Forest. "Disintegration of the international economy between the wars". In *ibid.* (eds) *The Great Depression of the 1930s: Lessons for Today,* Oxford: Oxford University Press, 2013.

Chinn, Menzie D. "A Primer on Real Effective Exchange Rates: Determinants, Overvaluation, Trade Flows and Competitive Devaluation", *Open economies review,* 17 (2006): 115-43.

Clavin, Patricia. *Securing the World Economy: The Reinvention of the League of Nations, 1920 -1946,* Oxford: Oxford University Press, 2013.

Crafts, Nick and Peter Fearon. "Depression and recovery in the 1930s: an overview". In *ibid.* (eds) *The Great Depression of the 1930s: Lessons for Today,* Oxford: Oxford University Press, 2013.

Eichengreen, Barry. *Globalizing Capital. A history of the international monetary system* (second edition), Princeton: Princeton University Press, 2008.

Eichengreen, Barry and Douglas A. Irwin. "The Slide to Protectionism in the Great Depression: Who Succumbed and Why?", *Journal of Economic History,* 70 (2010): 871-97.

Eichengreen, Barry and Jeffrey Sachs. "Exchange Rates and Economic Recovery in the 1930s", *Journal of Economic History,* 45 (1985): 925-46.

Eichengreen, Barry and Jeffrey Sachs. "Competitive devaluation and the Great Depression. A theoretical reassessment", *Economic Letters,* 22 (1986): 67-71.

Global Financial Data, http://www.globalfinancialdata.com/

Harris, Seymour E. *Exchange Depreciation. Its theory and it history, 1931-35 with some consideration of related domestic policies,* Cambridge, MA: Harvard University Press, 1936.

Irwin, Douglas A. *Trade Policy Disaster. Lessons from the 1930s,* Cambridge, MA.: MIT Press, 2012.

Krugman, Paul. *Exchange-Rate Instability,* Cambridge, MA: MIT Press, 1989.

League of Nations, *Report on Exchange Control*, Geneva, 1938.

Ljungberg, Jonas. "Nominal and real effective exchange rates for Europe, 1870-2016. Some methodological issues", *Lund Papers in Economic History,* no. 200, 2019.

Maddison, Angus. *The World Economy. A Millennial Perspective,* OECD, 2001.

Mitchell, Brian R. *International Historical Statistics, 1750-2010*, Basingstoke: Palgrave Macmillan, 2013.

Mouré, Kenneth. *Managing the franc Poincaré. Economic understanding and political constraint in French monetary policy, 1928-1936,* Cambridge: Cambridge University Press, 1991.

Olsen, Erling. “Perioden 1914-1960”. In *Dansk pengehistorie*, edited by Erling Olsen and Erik Hoffmeyer, Danmarks Nationalbank, 1968.

Romer, Christina D. “What Ended the Great Depression?”, *Journal of Economic History*, 52 (1992): 757-84.

Robbins, Lionel. *The Great Depression*, London: Macmillan, 1934.

Robinson, Joan. *Essays in the theory of employment*, London: Macmillan, 1937.

Royal Institute of International Affairs. “The End of the Gold Bloc” [signed “B.S.K.”], *Bulletin of International News*, 13 (1936): 3-11.

Schön, Lennart and Olle Krantz. “Swedish Historical National Accounts, 1560-2010”, *Lund Papers in Economic History*, no. 123, 2012.

Straumann, Tobias. *Fixed Ideas of Money. Small states and exchange rate regimes in twentieth century Europe*, Cambridge: Cambridge University Press, 2010.

Taylor, Alan M. “A century of Purchasing Power Parity”, *Review of Economics and Statistics*, 84 (2002): 139-50.

United Nations (1948), *Statistical Yearbook*, Geneva.

Appendix A: trade partners

Below are listed trade partners on which the effective exchange rates 1929-1939 are based, and which are included with bilateral exchange rates and trade in the calculation of export and import elasticities. The figures in parentheses show the percentage share these countries had in the total foreign trade of the country in question in 1929:

Austria: Czechoslovakia, Germany, Hungary, Italy, Poland, Switzerland, UK, USA, and Yugoslavia (78).

Belgium: Argentina, France, Germany, India, Netherlands, Russia/Soviet, UK, and USA (62).

Czechoslovakia: Austria, Germany, Hungary, Poland, Romania, Soviet, UK, and USA (69).

Denmark: France, Germany, Norway, Sweden, UK, and USA (85).

Finland: Germany, Russia/Soviet, Sweden, UK, and USA (69).

France: Algeria, Belgium, Germany, Italy, Spain, UK, USA, Sweden, and Switzerland (48).

Germany: Austria, Belgium, France, Italy, Netherlands, Soviet, Sweden, UK, USA, Spain, Denmark, Switzerland, Poland, Czechoslovakia, and Hungary (64).

Italy: Austria, France, Germany, Switzerland, UK, USA (53).

Norway: Denmark, France, Germany, Netherlands, Sweden, UK, USA, and Canada (74).

Sweden: Denmark, France, Germany, Netherlands, Norway, UK, USA, Soviet, and Finland (78).

Switzerland: Austria, France, Germany, Italy, UK, and USA (64).

United Kingdom: Argentina, Australia, Canada, France, Germany, India, Netherlands, New Zealand, Russia/Soviet, USA, Denmark, Sweden, Norway, Belgium, Switzerland, and Italy (74).

United States: Argentina, Brazil, Belgium, Canada, Chile, Czechoslovakia, Denmark, France, Germany, Italy, Japan, Mexico, Netherlands, Norway, Sweden, Switzerland, UK, Venezuela (73).

Appendix B: effective exchange rates for the US

In order to have effective exchange rates for the US that are consistent and comparable with those for European countries in Ljungberg (2019 – data available at https://ekh.lu.se/en/research/economic-history-data/Exchange_Rates_1870-2016), nominal (NEER) and real (REER) effective exchange rates are calculated for 1929-1939:

$$NEER_{us} = \Sigma[(e_{usj}\, m_{usj}) + (e_{usj}\, x_{usj})] \quad (1)$$

$$REER_{us} = \Sigma[(e_{usj}\, m_{usj} * p_j / p_{us}) + (e_{usj}\, x_{usj} * p_j / p_{us})] \quad (2)$$

where subscripts denote the US and country *j* respectively; e_{usj} is the annual change in the exchange rate taken as the amount of US dollars for one unit of country *j's* currency; *m* is the share of American imports coming from country *j*; *x* denotes the same for the exports*; p* is the annual changes in the consumer price index. Trade partners are as listed in appendix A. Data on trade are from Mitchell (2013), and annual exchange rates are calculated on monthly close rates in *Global Financial Data*; except for Chile, Mexico, and Venezuela, which are annual rates as given by the *UN Statistical Yearbook* (1948).

Appendix C: Gold reserves

Table C1 shows development of gold reserves valued in USD, with December 1930=100. 1930-1933 values are with the old gold parity of USD 20.67 per ounce, and from 1934 with the new parity of USD 35 per ounce. The gold bloc consists of France, Belgium, Netherlands, Switzerland and Poland. The four sterling countries are the UK, Denmark, Norway and Sweden. The control group includes Germany, Austria, Czechoslovakia, Hungary, Bulgaria, Romania, Greece, Yugoslavia, and Italy which originally was in the gold bloc but introduced exchange controls and depreciated in 1934.

Average columns emphasize the reserves of the gold bloc. When reserves are pooled greater weight is given to "rich" countries why the outflow from France results in a marked drop in 1936. The big discrepancy between the columns for the control group is due to the close to extinction of the German gold reserve.

Table C1. Gold reserves of central banks and governments (Dec 1930=100)

December	USA	Gold Bloc		4 Sterling		9 Control	
		Average	*Pooled*	Average	*Pooled*	Average	*Pooled*
1930	100	100	*100*	100	*100*	100	*100*
1931	96	191	*148*	89	*83*	105	*73*
1932	96	204	*171*	86	*82*	97	*69*
1933	95	185	*158*	115	*127*	126	*68*
1934	195	302	*275*	188	*215*	210	*94*
1935	240	250	*225*	212	*227*	187	*69*
1936	266	271	*182*	274	*343*	172	*60*

Source: Calculations on *Federal Reserve Bulletin*, various issues (1930s).

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