

MANAGING THE FRANC IN BELGIUM AND FRANCE: The Economic Consequences of the Exchange Rate Policies 1925-1936*

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RESUME

LA GESTION DU FRANC EN BELGIQUE ET EN FRANCE Les conséquences économiques des politiques du taux de change 1925-1936

En Belgique comme en France, l'entre-deux-guerres est marqué par une stabilisation monétaire en 1926 suivie d'une dévaluation au milieu des années trente. Cet article compare le contexte et les conséquences de ces politiques de taux de change apparemment identiques. En premier lieu, c'est la grande similitude des conséquences économiques de la stabilisation dans l'un et l'autre pays qui est soulignée. Le retour à un régime de changes fixes, loin de stimuler les exportations, annonce les premières difficultés dans le secteur international et favorise l'esssor du secteur domestique. Une analyse sectorielle remet en cause l'interprétation traditionnelle de la prospérité de la fin des années vingt. Les expériences belge et française, encore largement similaires durant les premières années de la grande dépression, divergent totalement à partir de 1935. Deux facteurs de divergence sont mis en exergue : d'une part les poids relatif des secteurs ; d'autre part les contextes socio-politiques respectifs dans lesquels s'inscrivent les dévaluations.

ABSTRACT

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In Belgium as in France, the period between the wars was marked by a monetary stabilization in 1926 and a devaluation in the middle of the 1930s. This article compares the context and the consequences of these apparently similar exchange rate policies. The economic consequences of the stabilization were similar: the return to a fixed exchange rate, far from stimulating exports, heralded difficulties in the international sector and led to a shift in resources toward the domestic activity. This sectoral analysis calls into question the traditional interpretation of the prosperity of the late 1920's. The great depression struck Belgian and France in much the same way, but from 1935 their experiences diverged sharply. Two main factors were crucial: first, the differing weights of the international and domestic sectors and second, the different socio-political contexts of devaluation.

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Introduction

Belgium and France, neighbours whose monies shared the same name, had similar monetary histories between the wars. The period was marked, in Belgium as in France, by two major events: a monetary stabilization in the middle of the 1920s and a devaluation in the middle of the 1930s. The stabilization, which took place in 1926 in both countries, ended a period of floating currencies and exchange rate depreciation. It buried any hopes of returning to the prewar gold parity but permitted both countries to join the gold exchange standard. Belgium and France were to become, to differing degrees, among the last defenders of the link to gold. Belgium finally devalued its currency in 1935, followed by France in 1936.

The purpose of this article is to attempt a comparative study of these two monetary episodes. Although one striking feature is that Belgium took its decisions about exchange rate policy in advance of France, the concern here is not with glorifying little Belgium as giving the lead to its large neighbour. Indeed the focus will not be on the making of policy but on its economic consequences. The role of monetary policy in the French economy between the wars is currently under revision. A closer look at the neighbouring Belgian experience lends support to this revisionist trend.

Most existing studies--by contemporaries and by historians, Belgian as well as French--see the late 1920s as a period of great economic prosperity in which exports, stimulated by undervalued exchange rates fixed at stabilization, were the main motor of growth in both countries. Such prosperity is argued to have helped permit the French economy better to resist the effects of the Great Depression.

The French version of this standard story has recently been challenged on two fronts. B. Eichengreen and C. Wyplosz (1990)¹ have shown that French growth in the late

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1920s rested more on the strength of investment, encouraged by a radical change in fiscal policy, than on the growth of exports stimulated by undervaluation of the franc Poincaré. An analysis at the sectoral level by J. Marseille (1980) has called into question the idea that prosperity was general and the notion that the franc Poincaré insulated France from the initial effects of the Depression.

In the case of Belgium I. Cassiers (1989)² has shown that the growth in the international sector, far from profitting from the stabilization, was being exhausted in the late 1920s. Prosperity came to depend more on the growth of domestic activity and on a surge of financial activity increasingly unrelated to underlying industrial trends

The objective of this paper is to compare these national studies rejecting the traditional interpretation of the management of the franc (Belgian or French) under the gold exchange standard, and to suggest the essential similarities of the Belgian and French experiences. As analysis draws primarily on information in these three studies, it by no means exhausts the possibilities of comparison.

The first section of the article gives an overview of the exchange rate histories of Belgium and France between the wars. The stabilizations of the 1920s and the devaluations of the 1930s are set briefly in their economic and socio-political context. The analysis of the economic consequences of the stabilizations is taken up in the second section. The clear similarities of experience shown by the three studies cited above suggest that comparative analysis be continued into the 1930s, which is done in section 3 for the depression and deflation of the early 1930s and in section 4 for the devaluations of the Belgian franc (1935) and the French franc (1936).

1. The Belgian and French Francs between the Wars

The histories of the Belgian and French francs between the wars may be divided into four periods.

From 1919 to 1926³ both currencies were floating. The financing of war and reconstruction led to inflation and exchange rate depreciation. At the beginning of the 1920s both countries lived in the double illusion that Germany would pay reparations and that their currencies would return to prewar gold parities. Both illusions was increasingly dispelled from 1924. The victory of the left in the French elections of May 1924

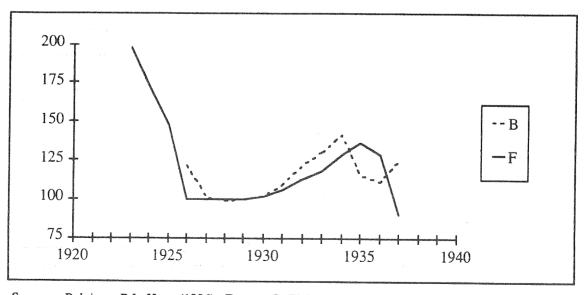
Based on I. Cassiers (1986).

G.E. Makinen and G.T. Woodward (1989) give a clear overview of this period, for Belgium as well as for France. For more detail, see L.H. Dupriez (1978) and H. Van der Wee and K. Tavernier (1975) on Belgium and A. Sauvy (1984), vol. 1 for France.

disquieted the financial community and the new government was rapidly confronted with difficulties in renewing its loans. As nine Ministers of Finance followed one another over the next two years, the franc depreciated rapidly (Figure 1). This downward pressure was communicated to the Belgian franc, which, since its origin, had been closely linked, economically and psychologically, to the French franc. Despite this link, the Belgian franc was stabilized de facto for six months in 1925. While this stabilization was the work of the centre-left government that came to power following the triumph of the socialists in the 1925 elections, the continued depreciation of the French franc under a leftwing government undermined the confidence of banks and other financial institutions that the Belgian socialists would be able to maintain the value of the franc successfully. In May 1926 this lack of confidence resulted in a massive failure to refinance the public debt. The crisis led to a government of national union, bringing parties of the right into the coalition and Emile Francqui, a private banker, into the government with the express task of stabilizing the franc. Francqui quickly did so, in September 1926, by means of drastic budgetary reforms and an explicit separation from the French franc.

In the meantime the left in France was also compelled to share power in the interests of exchange rate stability. In July 1926 Poincaré formed a government of national union and succeeded in halting speculation against the franc (incidentally facilitating Francqui's job in Belgium). The French stabilization became effective from December 1926 and was closely related, as in Belgium, to draconian measures intended to return the public finances to balance.

Figure 1. Nominal effective exchange rates of the Belgian franc and the French franc, 1929=100



Sources: Belgium: R.L. Hogg (1986); France: B. Eichengreen and C. Wiplosz (1990)

The laws of 25 October 1926 in Belgium and 24 June 1928 in France simply made official the earlier de facto stabilizations. Where both francs had exchanged at 25 francs per pound sterling before the war, they now traded at different values: Belgium had stabilized at 175 FB per £, France at 125 FF per £. The larger depreciation in Belgium may be explained, in part, by the fact that it occurred first, at a time when the French franc traded at even less than the Belgian franc and before the sharp deflation of prices that occurred in France during the second half of 1926⁴. In any case, the rates at which both francs were stabilized seems to have been below that strictly justified by purchasing power parities⁵. The adherence to these exchange rates in the context of the gold exchange standard marks the second period in the currencies' interwar history, one which would last until September 1931 when Britain left gold.

The third period, lasting until 1935 in Belgium and 1936 in France, was characterized by these two countries' strict fidelity to gold parities in a world increasingly given over to floating currencies. When the United States abandonned gold in April 1933 France, Belgium, Italy, Switzerland and the Netherlands decided to strength their allegiance to fixed exchange rates and formed the Gold Bloc. In order to defend their gold parities, these countries then undertook severe deflations. In effect, to remain competitive with countries in the sterling and dollar zones, the Gold Bloc sought to achieve by a fall in domestic prices what others obtained through exchange rate depreciations. This deflation, carried out in Belgium as in France by governments of the right, prolonged the depression.

Belgium entered the last period of its interwar monetary history eighteen months before France. In March 1935 it devalued the franc by 28%. The decision, taken by a new government incorporating the socialists and led by Paul Van Zeeland, was intended to put paid to the policy of deflation that had reigned in all rightwing governments since the beginning of the depression. In France the government of Léon Blum, after three months in office, abandonned the gold parity and devalued the franc in September 1936. Yet, in spite of the apparent similarities, it is in the period of the devaluations and after that the Belgian and French experiences differ the most. Whereas in Belgium the devaluation brought a certain degree of prosperity and calmed social tensions, the France of the late 1930s was riven by internal conflict and faced continued depreciation of its currency.

^{4 &}quot;Si l'on avait remis la stabilisation de deux mois, le taux de 125 eût aussi été atteint en Belgique, tandis que les devises rentraient" (L.H. Dupriez (1978), p. 76)

Commentators are unanimous on this point; see L. Dupriez (1978), H. Van der Wee and K. Tavernier (1975), A. Sauvy (1984), vol. 1, p. 70.

This quick overview of the interwar exchange rate histories of Belgium and France brings out the central importance of the stabilizations of 1926. The exchange rates fixed at that time were maintained at all costs for almost ten years, in spite of the upheavals in the international monetary system. As will be seen, the stabilizations led to intersectoral disparities in the Belgian and French economies that would be accentuated by the depression.

2. The Economic Consequences of the Stabilizations: the Convergence of Experience

2.1. France: A New View of Prosperity and its Causes

A devaluation--or stabilization at a favourable rate--can theoretically favour exports in two ways. If exporters maintain their prices in the domestic currency, then the fall in the exchange rate lowers prices expressed in foreign currency and increases their competitiveness. This is usually called the demand-side effect. But if exporters are price-takers on international markets and continue to sell their products at world prices, then their revenues in terms of domestic currency will rise. In so far as input prices do not rise or rise less than export prices, this will translate into an increase in profits. This is the supply-side effect, in that the increase in profits should stimulate the supply of export goods. If a currency stabilization is alleged to have encouraged a sustained expansion of exports, then it should be possible to observe one or the other--or a combination of--these effects

But in the case of France Eichengreen and Wyplosz cannot find either effect after 1927. The stimulative effect of stabilization on the demand for exports did not last long:

"Despite the real exchange rate's maintenance at peak levels through 1930, export volume fell in 1929, reflecting the decline in world incomes due to the onset of the Depression followed by imposition of trade restrictions abroad. The export share of GNP fell even earlier, in calendar year 1928. Although exchange-rate depreciation may have prevented an even more rapidly than this, the extent and the very fact of their decline suggests that the impact of real depreciation on export demand cannot by itself account for the persistence of French economic growth after 1928."6

Sectorally disaggregated data collected by J. Marseille support this conclusion, although they offer a reminder of the limits of the aggregates employed by Eichengreen and Wyplosz. The French balance of trade, in surplus from 1924 to 1927, turned into

B. Eichengreen and C. Wyplosz (1990), p. 158.

deficit thereafter. French exports of manufactured goods began to decline slowly, though within this fall there were major differences among sectors. In some industries the fall in export volume between 1926 and 1929 was as high as 46%.⁷

As for the supply side effect, the results are also negative. In order to judge the impact of the stabilization on the profitability of traded goods production, Eichengreen and Wyplosz look at the behaviour of domestic prices. Their results lend support to Marseille's argument that by halting the rise in wholesale prices accompanying the depreciation of the franc, the stabilization revealed to French exporters, too late, the tendency of world prices to fall and so put an end to a period of easy profits. The observed change in the movement of relative prices could have been behind the changes in sectoral growth:

"The rise in the ratio of retail to wholesale prices after 1927 implies an increase in the relative price of nontraded goods that should have shifted resources out of the production of exportables and into the home goods sector. This explains how the French economy accommodated the fall in export demand associated with the onset of the Depression abroad without significantly reducing the level of economic activity. At approximately the same time as the onset of the Depression was reducing foreign demand for French exports, the rise in the relative price of nontraded goods at home was transferring resources out of the production of exportables and into the production of nontradables."

While the company accounts analyzed by Marseille show great variations in profitability across sectors, the pattern of variations is consistent with that revealed by the movements in production and exports:

"There are indeed two sectors within French capitalism, a sheltered sector spared the weakening of the late 1920s and a sensitive, vulnerable sector tied to the markets for consumer goods and to transport, the profits of which stagnate and even crumble from the end of 1928, in some cases even earlier. It is as though the contraction of foreign markets, particularly noticeable from the end of 1927, was translated almost immediately in changes in the production, prices and profits of these sectors"9

This sectoral diversity seems to be a characteristic trait of the late 1920s. It is also to found in the new issues of companies. Marseille found that the overall growth of 44% in new issues in 1929 hid large sectoral differences, from -46% in textiles to +72.5% in electricity and 120.8% for real estate and banking.

In France, then, two general phenomena stand out: (1) within industry, a constrast between the vigorous health of the sheltered sectors and the first signs of crisis in the

J. Marseille (1980), pp. 653-4.

⁸ B. Eichengreen and C. Wyplosz (1990), p. 162

J. Marseille (1980), pp. 658-9. Own translation.

exposed ones; and (2) a certain euphoria in banking, finance and real estate, perceived at the time as a sign of great prosperity, but better seen as the augur of a financial crisis.

In sum, Eichengreen and Wyplosz' stimulating macroeconomic observations and Marseille's sectoral approach come together to form a new picture of the late 1920s in France. Far from stimulating exports, the stabilization revealed the underlying downward trend in world prices and opened the door to trouble for the exporting industries. The two works cited above do differ somewhat in their emphases. Eichengreen and Wyplosz insist on the role of investment in sustaining growth in the late 1920s. Marseille is more skeptical of this growth, proposing indicators that suggest an earlier reversal and emphasizing the contrast between the financial boom and the exhaustion of the factors underlying industrial growth. There is no need here to go further into the details of the French case. A look at Belgium will show the plausibility and the fruitfulness of this new interpretation of the French stabilization.

2.3. Belgium: Difficulties in the International Sector and Financial Boom¹⁰

To understand the consequences of exchange rate changes on an economy so open as that of Belgium in the 1920s¹¹, a sectoral analysis is even more essential than in the case of France. The justification and methods for dividing industrial activity into an international sector on one hand and a domestic sector on the other have been discussed in detail elsewhere¹², so here the focus will be on the parallels to be drawn with France in the effects of stabilization.

The depreciation of the Belgian franc during the early 1920s, as well as the strong demand generated by reconstruction for the standard goods in which Belgian industry specialized, produced a rapid growth in exports. The experience of Belgium in the years 1920-1926 has all the hallmarks of export-led growth: rapid growth of trade, high profitability of tradable goods producers, fast growth of employment in the international sector despite significant increases in productivity.

¹⁰ This section is based on I. Cassiers (1989), esp. pp. 140-54.

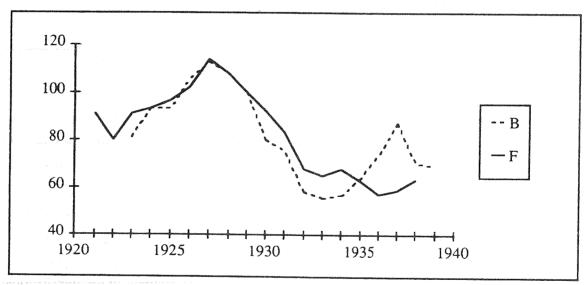
Belgium was the most open of all the economies surveyed by I. Svennilson (1954). In 1938 its exports were 59% of production, as against 15% for France and 26% for the United Kingdom.

I. Cassiers (1989), ch. 1. The international sector of the Belgian economy included the following industries: coal, coke, iron and steel, nonferrous metals, quarrying, textiles (except clothing manufacture), chemicals and glass. The domestic sector took in food processing, construction and public works, gas and electricity, paper and clothing.

The monetary stabilization of 1926 marked an end to these trends. To see that the growth of the late 1920s did not depend on exports stimulated by a favourable exchange rate consider, in turn, the demand and supply side effects.

At the end of the 1920s the growth of Belgian exports slowed and their share in national product fell noticeably. The weakness of the notion that growth was export-led can be seen in Figure 2. The falling export share in GNP did not mean that Belgium was losing its share in world markets, for the slowdown in trade was widespread, as the extraordinary growth in world production began to run up against a shortage of outlets¹³. In addition, the evidence suggests that Belgian firms behaved as price-takers¹⁴ and that changes in the value of the franc were reflected almost completely in their profit margins. In the case of a small open economy specialized in standardized products, it is the supply-side effects that deserve the greatest attention.

Figure 2
Export performance in Belgium and France. Exports / GNP, 1929=100



Sources: Belgium: B.R. Mitchell (1975) and M. van Meerten and al.;

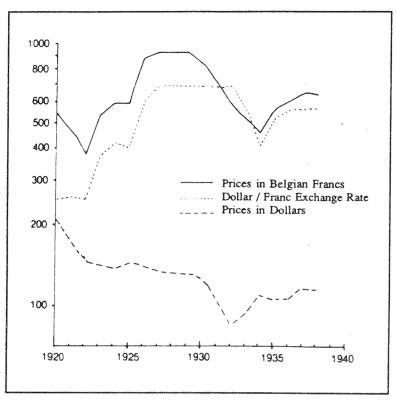
France: A. Sauvy (1984) and J.C. Toutain (1987)

As was the case in France, the return to a fixed exchange rates abruptly halted the growth in prices of tradeables. Figure 3 shows clearly the change in the situation facing firms in the international sector from 1927.

¹³ See I. Svennilson (1954).

¹⁴ This hypothesis was tested on limited data available by ordinary least squares regression and not rejected (I. Cassiers (1989), p. 107).

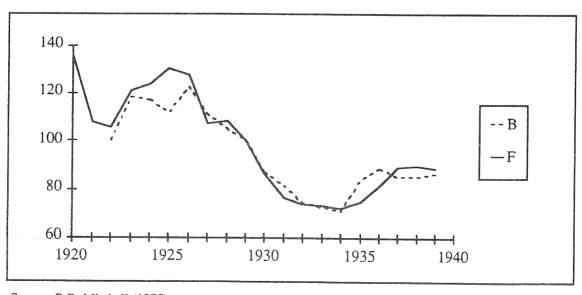
Figure 3.
World prices of manufactures, 1913-1914 = 100



Source: I. Cassiers (1989)

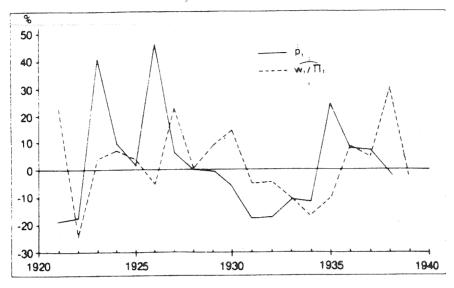
Figure 4.

Ratio of wholesale to retail prices in Belgium and France, 1929=100



Source: B.R. Mitchell (1975)

Figure 5. Belgium, International Sector, Output Prices (p₁) and Unit Labour Costs (w_1/Π_1) Annual Rate of Growth (%)

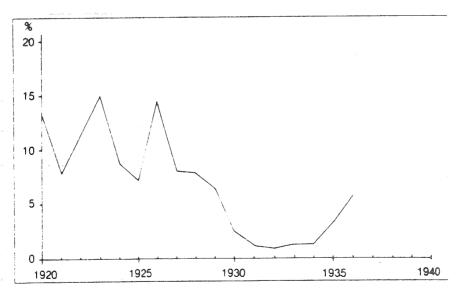


Source: I. Cassiers (1989)

Figure 6.

Belgium, International Sector,

Distrubuted Profits Relative to Paid Up Capital and Reserves (%)



Source: I. Cassiers (1989)

Table 1
Statistics of Joint Stock Companies in Belgium, 1927-1929 (1927=100)

	Banking	Finance	Industry						
			Domestic	International					
Numbers of Companies									
1927	100	100	100	100					
1928	92	142	132	103					
1929	91	163	141	110					
Paid Up Capital									
1927	100	100	100	100					
1928	118	232	115	105					
1929	144	402	154	150					
Aggregate Net Profits									
1927	100	100	100	100					
1928	132	223	106	72					
1929	154	310	140	86					
Distributed profits									
1927	100	100	100	100					
1928	135	234	106	93					
1929	163	300	143	108					

Source: I. Cassiers (1989)

The consequences of this reversal were all the more dramatic in that domestic prices did not move in the same way. In Belgium relative price movements were similar to those highlighted by Eichengreen and Wyplosz in the case of France. As shown in Figure 4, in Belgium relative price movements were similar to those highlighted by Eichengreen and Wyplosz in the case of France, although the fall in the ratio of wholesale to retail prices was deeper and more prolonged in France.

This reversal, begun in 1927 with the stabilization, was at the root of a severe crisis in profitability in the international sector. A comparison of Figures 5 and 6 shows this convincingly. The continuing fall in profits from 1927 to 1932 seems to have been closely associated with differences in the rates of growth of output prices and unit labour costs.

While the international sector was suffering from a slowdown in growth from 1927, and even more so from the very unfavourable change in the structure of prices, the domestic sector was doing much better. The vigorous growth in the real wage bill+30.8% between 1927 and 1929--certainly had a favourable impact on the growth of final demand. Table 1 illustrates the contrast between the two industrial sectors. While net profits in the international sector dropped by 14% between 1927 and 1929, those of the domestic sector rose by 40%.

The same table also shows the extraordinary surge in banking and financial activity. These statistics illustrate H. Van der Wee and K. Tavernier's observation, recalling that the monetary stabilization was accompanied by a reform of the National Bank widely perceived to have strengthened the power of private banks:

"The private banks were given a free hand and contributed thereafter to the feverish expansion of the late 1920s. It was an impetuous enthusiasm not checked in time, an eruption of entrepreneurial spirits altogether too violent." ¹⁵

It is strange that the feverish character of economic activity in the late 1920s has been emphasized so rarely. The financial agitation that reigned in Belgium seems to have masked to most observers the first signs that industrial activity in the international sector was weakening. Yet the signs of financial overheating were numerous¹⁶:

- On the Brussels stock exchange prices rose by 246% between August 1926 and May 1928, when the peak was reached.
- New issues of shares and bonds went from 2656 million francs in 1926 to 14,966 million francs in 1929.
- In 1929 46% of all new issues of shares and bonds were for banking and financial institutions, as against 19% in 1927 and 17% in 1930
- The banks invested massively in financial companies: in 1929 62% of their interventions in company capital formation concerned the financial sector, as against 18% in 1927. This share would fall to 27% in 1930.
- Dividends declared by all joint stock companies grew by 45% between 1927 and 1929, but their cash flow increased by only 7%.
- The great divergence of experience among sectors shown in Table 1 deserves emphasis: while the profits distributed by financial companies tripled, the international sector reluctantly kept paying dividends at a time when its undistributed profits fell by 37%.

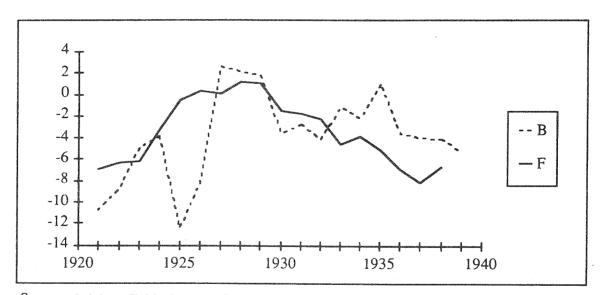
¹⁵ H. Van der Wee and K. Tavernier (1975), p. 208. Own translation.

¹⁶ I. Cassiers (1989) et Banque Nationale de Belgique.

These trends are certainly part of the "turbulence dans les affaires" 17 observable in all western countries at this time. Yet they seem particularly marked in Belgium, perhaps because of the inflow of capital that followed the monetary stabilization.

The fact that a large mass of capital in search of profitable investments could generate financial overheating also needs to be seen in the context of changes in public finance. Francqui could only stabilize the franc in Belgium through radical budgetary measures (Figure 7.). Within two years a deficit equivalent to more than 12% of GNP gave way to a comfortable budgetary surplus. In so far as the available series may be believed¹⁸, the change in fiscal stance was much more pronounced in Belgium than in France. While Poincaré needed only to continue the fiscal restraint begun by his predecessors, Francqui had to bring definitively to an end the laxness apparent in 1925. By contrast with the French case, putting the Belgian public finances in order was not limited to cuts in expenditures. New taxes were levied, bringing an increase in the tax share in national income from 10.9% in 1924 to 16.2% in 1927.

Figure 7.
Budget surplus as a share of GNP in Belgium and France (%)



Sources: Belgium: E. Moulard et J. Grauls (1954) and M. van Meerten and al.;

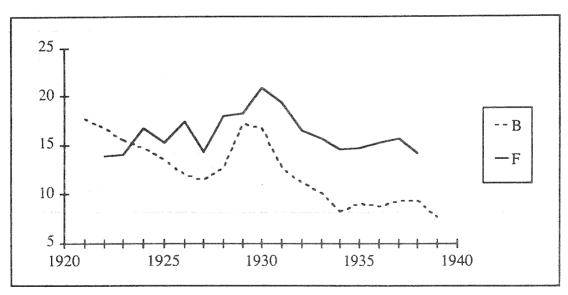
France: INSEE (1966) and J.C. Toutain (1987)

¹⁷ H. Morsel (1977), pp. 174-9.

A. Sauvy and F. Baudhuin both note the elements of fantasy in the budgetary figures of this periode.
Note, too, that the contrast between 1926 and 1927 was exaggerated somewhat by the exclusion from the government budget after July 1926 of the expenditures of the Belgian State Railways.

Although the pace of budgetary reform differed in the two countries, they both had repeated budget surpluses at the end of the 1920s. As in the case of France, for which Eichengreen and Wyplosz invoke the crowding-in effect of fiscal stabilization, the appearance of a government budgetary surplus was coincident in Belgium with a strong surge in private investment (see Figure 8). When sectoral data becomes available, a detailed analysis of Belgian investment across the two broad sectors should be instructive. 19 The rise in investment in the domestic sector can be easily explained by the growth in domestic demand, accompanied by still high profits at the end of the 1920s. The massive investments that appear to have been made in the international sector are less understandable, in that export demand was weakening and profits falling sharply. Did the combination of a brutal rise in wage costs and an abundant supply of capital lead firms to make labour-saving investments? In any case, the growth in investment demand in the late 1920s was not sufficient to protect the Belgian economy from the world crisis. Its degree of openness was far too high for it not to have been plunged immediately into distress. On this point, the Belgian case appears to differ from that of France. But perhaps it simply shows features that are more accentuated though fundamentally similar, a question to be taken up next.

Figure 8
Investment as a share of GNP in Belgium and France (%)



Sources: Belgium: M. van Meerten and al.; France: B. Eichengreen and C. Wyplosz (1990)

Such an analysis will soon be possible, thanks to the forthcoming publication by M. Van Meerten and al. of estimates for investment by sector.

3. Crisis and Deflation: The Propagation of the Depression

France is generally considered to have remained sheltered from the crisis longer than most countries. Eichengreen and Wyplosz offer a new sort of explanation for this remarkable resistance. They suggest that the good economic health of France until 1930, or even 1931, was "due to the fact that the fiscal stabilization switched demand toward domestic sources, namely, investment, reducing the economy's dependence on foreign demand and insulating the economy from the initial effects of the Great Depression." But this good health was only relative, and when Marseille's many disaggregated indicators are examined, the early impact of the crisis on the more vulnerable sectors of French economy is apparent. In these sectors exports, production and profits fell from the beginning of the international crisis.

As can be seen from the Belgian case, these two approaches are complementary. In Belgium the crisis hit the international sector very quickly and sent it into severe depression, while the domestic sector remained relatively prosperous, sustained by domestic demand. The sectoral differences which appeared with the stabilization were accentuated by the depression and reinforced year by year through the attachment to gold. Rigorous deflationary policy eventually broke domestic demand and generalized the depression.

In the 1930s the existence of sectoral differences caught the attention of some Belgian and French economists. In Belgium L.H. Dupriez (1934) refined his analysis of economic fluctuations by introducing a distinction between sheltered and non-sheltered industries and proposed the outline of a Scandinavian model thirty years ahead of its time. His work soon inspired J. Dessirier (1935), columnist of the Revue d'économie politique, to try to show how adherence to the pre-crisis parity led in France, as in Belgium, to disequilibrium in the domestic economy. Both authors helped prepare the ground theoretically for devaluations that would attempt to restore an equilibrium between the two sectors.

The presence of sectoral disequilibria in Belgium and France can be seen in Table 2. Although this table should be read with caution²⁰, the disequilibrium appears to have been more severe in Belgium: the sheltered sector seems to have resisted more successfully, while the collapse of profits in the non-sheltered sector was more complete.

These figures are aggregates taken from separate Belgian and French sources. The definitions of the sectors and of profits may differ.

Table 2
Index of profits distributed by joint stock companies (1928-29=100)

CENTRAL COMPANY OF THE PROPERTY OF THE PROPERT	Fra	ince	Belgium						
and the second of the second second	Sheltered	Non-sheltered	Sheltered	Non-sheltered					
	Sector	Sector	Sector	Sector					
1931	96	48	147	63					
1932	88	40	145	41					
1933	89	40	141	33					

Sources: Belgium: I. Cassiers (1989); France: J. Dessirier (1935)

The causes of such sectoral disequilibria can be seen in the figures presented earlier. The way in which the depression spread in Belgium, it will be seen, resembles almost point for point the description by F. Caron and J. Bouvier of the French case.²¹

Figure 2 shows the dramatic contraction of external demand between 1929 and 1932. All industrialized countries saw their markets dry up, with the volume of European exports falling by 38% in three years. But for Belgium and France sales abroad took place at lower and lower prices due to their adherence to the gold parity when their trading partners were devaluing. The continuous appreciation of the Belgian and French francs (Figure 1) was a great burden for tradable goods producers. In the Belgian case, where firms behaved as price-takers, the effect of overvaluation was absorbed almost completely by the profits of the international sector. Here again the consistency of the story told by Figures 3, 4 and 5 is remarkable. Figure 3 shows how prices in Belgian francs failed to reflect the recovery of 1933-34 and continued their uninterrupted fall as a result of attachment to the gold parity. In the space of four years the prices received by Belgian exporters fell by 50%. The resulting profitability crisis was all the more serious in that domestic prices resisted downward pressures. Figure 4 illustrates how much the ratio of wholesale to retail prices deteriorated. As wages tended to follow retail prices, unit labour costs rose relative to output prices until 1934. The collapse of profits distributed by the international sector (Figure 6 and Table 2) is only a pale reflection of desperate situation faced by tradable goods producers: from 1932 to 1935 this sector was in deficit (total profits minus total losses was negative).

Nothing so dramatic afflicted the domestic sector. But its good health was only relative. The fall in wholesale relative to retail prices should not deflect attention too

²¹ F. Caron and J. Bouvier (1980), p. 656.

much from the domestic deflation that was intended to compensate for the appreciation of the franc, though it never quite did so. The cost of living and nominal wages fell by 20%; unemployment reduced domestic purchasing power; investments fell off in response to overcapacity and the fall in profits (Figure 8); the government's newfound budgetary rectitude led to a further contraction of domestic demand from 1933 (Figure 7).

The way in which Belgium, through its adherence to gold, fell into depression is perfectly consistent with the French experience as set out in detail by K. Mouré (1991):

"From July 1933 the French economy declined while conditions in most of the rest of the world improved (...) Elimination of the budget deficit was the focus of government attention; this was believed essential to economic recovery and to preservation of the franc. But as revenue declined, successive governments were unable to raise taxes and cut expenditures sufficiently to balance the budget, and recurrent borrowing pushed up interest rates and weakened confidence. At the same time import quotas, subsidies, and prices supports, adopted for political reasons, rendered deflationary programs economically incoherent."²²

4. The Devaluations: Divergent Experiences

According to A. Sauvy, Belgium and France faced much the same dilemma in the mid-1930s: deflation or devaluation. The essential difference in their experience lay in the existence in Belgium of an "organisme de pensée et de réflexion", the school of economists around L.H. Dupriez in Louvain, which led that country to undertake "une opération d'avant garde", a devaluation based on scientific calculation.

"In the history of the interwar economy there are few examples of scientific reasoning dictating, in this fashion, a political decision....Thereafter Belgian policy would long be inspired by the Louvain Institute. The paths of Belgium and France became totally separate and, ironically but also logically, it would be Belgium that proved the model of monetary virtue, notably in 1945, whereas France, which had become allergic to deflation, went from adventure to adventure.....This striking event, which marked the victory of technique, emphasized once again France's problems."²³

That the Belgian devaluation was carefully calculated on the basis of the theory of purchasing power parity deserves to be underlined, if only because it was so unlike the

K. Mouré (1991), p. 276. See also F. Caron and J. Bouvier (1980), pp. 659-60. On the contradictions in Belgian deflationary policy, see I. Cassiers (1989), pp. 162-4.

A. Sauvy, vol. 1, p. 169. Own translation. The pioneering nature of the Belgian devaluation is also underlined by C.P. Kindleberger.

monetary confusion and improvised devaluations of the period. But it is perhaps a bit extreme to take this to be the essential difference between the Belgian and French experiences in the late 1930s. Two other differences are worth emphasizing.

4.1. A First Difference: the Relative Weight of Sectors

The monetary stabilizations in Belgium and France and the subsequent devaluations elsewhere had created great sectoral disparities in prices and profits. Firms in the international sector were severely tested; those in the domestic sector were, by comparison, in a reasonably good position. This was true of both countries. But the relative weights of the two sectors both in economic activity and in political decision-making differed. The sheltered sector in France was larger and more powerful than its counterpart in Belgium.²⁴ This could explain the *mildness of the depression* and the resitance to changes in economic policy, as Mouré has shown²⁵. In Belgium, on the other hand, the share of the international sector was so large that the depression was fairly rapidly communicated to the sheltered sector.

Differences in the industrial structures of the sheltered sectors in the two economies also influenced their political leverage. The sheltered sector in France, as defined by Dessirier and Marseille, seems to have contained more large firms and cartelized industries than was the case in Belgium. Representatives of this sector argued publicly against devaluation, insisting, in effect, that exporting firms not be allowed to profit from another stroke of good fortune like that of the early 1920s. ²⁶ In Belgium, by contrast, the interests of the sheltered sector were relatively poorly defended, due to its small size and the prevalence of small firms within it. Another, perhaps more important factor in Belgium was the heavy involvement by banks in the large enterprises of the international sector. It is striking how the abandonment of deflation in favour of devaluation coincided with the threat of bank failures: as the result of financing the international sector's losses, the banks own defences against deflation had been eroded.

The differences in industrial structure hidden behind the sectoral breakdown may then explain why France was less pressed to devalue. Although the devaluation of the Belgian franc in 1935 worsened the French situation, the Popular Front government that took power in June 1936 affirmed its devotion to the gold parity and

In order to analyze this point fully, it would be necessary to compare, first, the sectoral composition of the two economies. It would then be interesting to examine degrees of industrial concentration in these sectors and the extent to banks were involved in industry.

²⁵ K. Mouré (1991), p. 277

²⁶ Marseille (1980), p.674; J. Dessirier (1935), p.1350

"avoided devaluation until it could no longer be postponed. It was a coalition almost entirely opposed to devaluation, and its leaders would not decide to devalue as long as any freedom of choice remained. When it came, the devaluation was not so much a significant departure from previous policy as a necessary retreat, too long delayed, in an effort to recover the stability essential for a durable recovery." ²⁷

4.2. A Second Difference: The Socio-Political Context

The very different political contexts in which the decisions to devalue were taken certainly influenced subsequent divergences in monetary experience. It was noted above that the monetary stabilizations of the 1920s could only succeed, in Belgium as in France, if they gained the confidence of bankers and financiers. In the mid-1930s there is little doubt that the Van Zeeland government, composed of all the major parties, had the confidence of holders of capital, whereas this group was legitimately upset by the decisions of the Popular Front. Or rather, by the order in which these decisions were taken. A comparison of Belgian and French policies in the years 1935-37 shows that much the same economic and social measures were adopted, but in an order that was reversed.

The Popular Front that came to power in June 1936 started from the principle that an increase in purchasing power constituted in itself an alternative to deflation. As Mouré observes:

"The Socialists hoped to generate recovery by augmenting purchasing power, believing that prices would then fall because of higher production and tax revenue would rise to finance the growth in government spending." 28

Accordingly, one of the first steps taken by Blum was a wage increase. This could only aggravate the sectoral disequilibria that had resulted from the increasing overvaluation of the franc since 1929. The direct increase in labour costs was almost doubled in practice by the introduction of the forty-hour week without a comparable reduction in wages. Of course, as C. Asselain²⁹ has observed, the reduction in working time was part of a programme designed to put the unemployed back to work and to stimulate final demand. But tradable goods producers, who had already seen their profits cut to the bone, saw this measure above all as an increase in hourly wage costs. The forty-hour week came to be a symbol around which the hostility of the right to the Popular Front was focussed. The growing distrust by holders of capital brought on the

²⁷ K. Mouré (1991) p.279-80

²⁸ K. Mouré (1991), p.237

²⁹ C. Asselain (1974), p.673

most serious financial crises that France had known, according to Caron and Bouvier, and led to the devaluation. These authors hold that the devaluation, of between 25 and 34%, was too little:

"it did not compensate for the gap that had resulted from the English and American devaluations and from the resulting increase in domestic prices that had taken place since July." 30

In February 1937 Blum was forced to call a halt to further changes in social policy. In December his successor let the franc depreciate even more (Figure 1). Revision of the forty-hour week law was, in the end, the price that had to be paid to regain the confidence of wealth-holders.

In Belgium the socialists' opposition to deflationary policy, from 1933, coalesced around the Plan du Travail conceived by Henri De Man. The Plan proposed, as would the Popular Front, that economic activity be stimulated by a large increase in domestic purchasing power. The many social reforms that it contained were presented as the means to widen consumption demand and so come out of the depression. Like their French counterparts, the Belgian socialists ignored the monetary implications of their policies and reaffirmed their attachment to the gold parity. The advocates of devaluation thus have to be sought in another quarter. They were the university economists whose perspicacity Sauvy has praised. Their influence on the centre-right Catholic party produced a second force opposing deflationary policy. When, in March 1935, social unrest and the threat of a banking crisis combined to force a radical change in economic policy, the proponents of these two alternatives to deflation, in principle independent, found themselves associated in a government of national union.

The devaluation was the first act of the Van Zeeland government which by its deft political presentation gained both the confidence of the financiers and the patience of the unions. The devaluation was carefully calculated to bring Belgian prices back into line with British and American prices and to restore the profits of the international sector. It was only afterward, when firms had been given a breath of life, that concessions to the left were brought forward. The increase in wages, reduction in working hours, payed vacations and many other measures that figured in De Man's Plan du Travail began to be implemented at a prudent speed and in a manner so as not to threaten profits. As against what took place in France, "the social reform of 1936 was limited to what was possible for firms." It was thus fairly timid, certainly far short of the hopes of the socialists, but the gains made endured.

³⁰ F. Caron et J. Bouvier (1980) p. 661

³¹ L'expérience Van Zeeland...p. 206. Own translation.

4.3. The Consequences of the Devaluation of the Belgian Franc

The Belgian devaluation, worked out in this socio-political context and accompanied by measures to keep the growth in wages and domestic prices under control, corrected the sectoral disequilibria that had arisen in the period from 1926 to 1934 and relaunched a more balanced growth. The figures presented above illustrate the impact of the devaluation on the Belgian economy.

From 1935 tradable goods producers finally began to benefit from the rise in world prices that had begun in 1933 (Figure 3): after a fall of 50% from 1927 to 1934, world prices of manufactures expressed in Belgian francs recovered by 43% in the next three years. This increase was all the more advantageous to firms in the international sector in that wages were under control. In 1935 the large difference in the movements of output prices on the one hand and unit labour costs on the other explains the rise in the profits distributed by the international sector (Figure 6). After an aggregate loss of 43 million francs in 1934 the sector's profits amounted to 717 million francs in 1935, 1,176 million in 1936 and 1,509 million in 1937³². Domestic prices were kept under control, so that, after the initial shock of the devaluation, the relative prices stabilized at a level more favourable to the international sector (Figure 4). The extent of the devaluation had taken account of an anticipated once-and-for-all increase in domestic prices³³. Preventing further increases from undoing the effect of the devaluation was the task of several additional measures: customs duties were lowered; sanctions were threatened in the case of price increases judged to be excessive; wage increases were controlled through the Conférence Nationale du Travail, created in June 1936 to bring labour, business and government together for collective bargaining at the national level.

There was a noticeable increase in purchasing power as a result of growth in real wages and the reduction in unemployment arising from an increase in activity. The rise in real labour income--23% between 1935 and 1937--seems to have realized the expectations of the left which, like the Popular Front, hoped to compensate for the apparently permanent contraction of international trade with a development of the domestic market. In Belgium, both right and left agreed that a rise in purchasing power would in the medium term permit a reorientation of the economy toward the domestic

³² I. Cassiers (1989), p. 236. Based on the Banque Nationale de Belgique's summary statistics drawn from company accounts

Dupriez had calculated, on the basis of purchasing power parities, that a devaluation of 25% was necessary to bring the Belgian franc back into line with the pound and the dollar. He added 3% to take account of higher import prices. See L.H. Dupriez, (1978), p.106-107.

sector. This view was given its official statement by the *Commission d'Orientation Industrielle*, created in 1935 to advise the government on economic policy.

The Belgian devaluation of 1935 was thus noteworthy for the set of policies which accompanied it. These measures were designed to promote a more balanced growth in the short term and to reorient industrial activity in the long term so as to make the economy less vulnerable to changes in world markets. This latter objective has, in fact, never been attained, but stronger and more balanced growth in the short-term seems to have been achieved, to judge from the data currently available. The devaluation also left its legacy for policymaking, for subsequent exchange rate operations have been planned so as to take account of sectoral differences along the lines of what is known today as the Scandinavian model.

5. Conclusions

This article has compared exchange rate policy in Belgium and France between the wars, concentrating on the most striking lessons that can be drawn from the available literature. This explains the variety of approaches, from the investigation of the socio-political context of policy-making to the analysis of the consequences of monetary policy.

The similarity in the economic consequences of the stabilizations carried out in 1926 is astonishing and reinforces the recent skepticism about whether the boom of the late 1920s was export-led. In Belgium, as in France, the return to a fixed exchange rate, far from stimulating exports, heralded the first difficulties in the international sector and led to a shift in resources toward the domestic activity. In both countries it was investment, not exports, that sustained demand at the end of the 1920s. At the same time the multiplication of financial activity concealed the early exhaustion of foreign trade and the incipient sectoral disparities.

The fidelity of the two francs to gold, together with the departures of the pound and the dollar, widened these disparities in the early 1930s and strangled the profitability of tradable goods producers. The economic situation deteriorated more rapidly in Belgium as a result of its much greater openness, which contributed to the earlier devaluation of the Belgian franc.

The Belgian devaluation was part of a socio-political compromise that assured it success, whereas the devaluation of the French franc, along with the imposition of the forty-hour week, became a symbols of the left's failure.

The Belgian devaluation of 1935 seems to have been the first time that monetary policy was linked explicitly to the internal distribution of incomes: not only the traditional distribution between wages and profits, but also the distribution of profits between sheltered and unsheltered sectors, a distinction newly introduced. Such questions of income distribution have figured prominently in recent monetary adjustments, notably the devaluation of the Belgian franc in 1982 and that of the French franc in 1986. On the eve of European monetary union it is salutary to rediscover how two of the partners to that arrangement learned that the management of the exchange rate could require painful compromises and could influence in the medium term their economic structures.

References

- Asselain, J.C. (1974). 'Une erreur de politique économique : la loi des quarante heures de 1936' Revue économique, 25, juillet, pp. 672-705.
- Banque Nationale de Belgique. Statistiques économiques belges, 1919-1928 et 1929-1940. Numéros spéciaux du Bulletin d'Information et de Documentation de la BNB.
- Boyer, R., dir., (1991). Paradoxes français de la crise des années 1930. Le Mouvement social, Janvier-mars.
- Caron, F. et J. Bouvier (1980). 'Guerre, crise, guerre', in F.Braudel et E. Labrousse: Histoire économique et sociale de la France, Paris, PUF, tome IV, 2è vol.
- Cassiers, I. (1986). Croissance, crise et régulation en économie ouverte. La Belgique entre les deux guerres. Thèse de doctorat, Université Catholique de Louvain.
- Cassiers, I. (1989). Croissance, crise et régulation en économie ouverte. La Belgique entre les deux guerres. Bruxelles: De Boeck Université.
- Dessirier, J. (1935). 'Secteurs 'abrité' et 'non abrité' dans le déséquilibre actuel de l'économie française', *Revue d'économie politique*, vol. XLIX, n°4, juillet-août, pp.1330-1358.
- Dupriez, L.H. (1934). 'La conjoncture de la Belgique et du Luxembourg', Bulletin de l'Institut de Recherches Economiques, Louvain, n°3, pp.219-237.
- Dupriez, L.H. (1978). Les réformes monétaires en Belgique, Bruxelles: Office international de librairie.
- Eichengreen, B. and C. Wyplosz (1990). 'The Economic Consequences of the Franc Poincaré', in B. Eichengreen, Elusive Stability. Essays in the History of International Finance, 1919-1939, Cambridge: C.U.P.

- Hogg, R.L. (1986). Structural Rigidities and Policy Inertia in Interwar Belgium., Brussels: Verhandelingen van de koninklijke academie voor wetenschappen, letteren en schone kunsten van België, Letteren 48, n°118.
- Hogg, R.L. (1987). Belgium, France, Switzerland and the end of the Gold Standard, in R.T. Griffiths (ed.), *The Netherlands and the Gold Standard*, 1931-1936. Amsterdam: Neha, pp.193-210.
- INSEE (1966). Annuaire statistique de la France : Résumé rétrospectif. Paris: INSEE.
- Makinen, G.E. and G.T. Woodward (1989) 'Funding crises in the Aftermath of World War I', in *Public Debt Management: Theory and History*, ed. by R. Dornbusch and M. Draghi, CEPR, CUP, pp.153-185.
- Marseille, J. (1980). 'Les origines 'inopportunes' de la crise de 1929 en France', Revue Economique, vol. 31, n°4, pp. 648-684.
- Mitchell, B.R. (1975) European Historical Statistics, 1750-1970. London: Macmillan.
- Morsel, H. (1977). 'Conjoncture et structures économiques du monde jusqu'à la grande crise (1919-1929)' in P. Léon, *Histoire économique et sociale du monde*, Tome 5 : *Guerres et crises*, 1914-1947, volume dirigé par G. Dupeux, Paris: Colin, pp.145-188.
- Moulard, E. et J. Grauls (1954). 'Les résultats budgétaires de 1919 à 1939', in *Histoires des finances publiques en Belgique*, Bruxelles: Bruylant, Vo. 2, pp.269-290.
- Mouré, K. (1991). Managing the Franc Poincaré, Cambridge: CUP.
- Sauvy, A. (1984). Histoire économique de la France, Paris: Economica, 3 volumes.
- Svennilson, I. (1954) Growth and Stagnation in the European Economy. Geneva: UNO.
- Toutain, J.C. (1987). Le produit intérieur brut de la France de 1789 à 1982. Economies et Sociétés, Cahiers de l'ISMEA, n°15.
- Vandendriessche, S. (1977) 'Evolutie van de Belgische centrale overheidsuitgaven sinds 1919. Onderzoek naar de determinerende factoren', *Bulletin de documentation du Ministère des finances*, Bruxelles, nov. pp.37-112 et déc. pp.145-234.
- Van der Wee, H. and K. Tavernier. (1975). La Banque nationale belge et l'histoire monétaire entre les deux guerres mondiales, Bruxelles.
- Van Meerten, M., P. Clement and P. Nefors (forthcoming). Gross Capital Formation, Government expenditure and net Exports in Belgium during the Interwar Period 1920-1939. Brussels-Leuven.
- Villa, P. (1990). Une analyse macroéconomique de l'économie française au 20e siècle, Paris, INSEE, mimeo.
- xxx L'expérience Van Zeeland en Belgique. Lausanne, Payot, 1940

Appendix Table

_	Industrial Production B		49.6	43.9	62.6	70.7	87.8	87.0	101.6	288	102.4	0.00	100.0	85.4	74.0	500	74.8	71.5	77.2	~	× 47	atternocontains.
9	Industrial		53.9	46.8	61.1	69.4	76.8	74.2	85.7	92.9	99.4	100.0	89.3	80.1	69.1	71.4	73.0	83.0	86.7	97.2	78.7	83.3
<i>(</i>			61	53	51	57	65	69	8	94	94	8	101	62	- 00 - 00	85	82	75	80	Ç	2	122
8)	Cost of Living B	The state of the s	52.1	45.5	42.4	49.6	57.5	61.1	73.4	6.06	94.2	100.0	102.7	92.3	83.2	82.3	79.1	79.5	84.1	95.5	93.2	92.3
	Prices F		83	57	54	69	80	8	115	101	102	8	87	74	65	62	59	56	65	8	103	108
(4)	Wholesale Prices B	Afficial merchanism containers and my property for the last and an analysis and the last and an analysis and a	ı,	43.0	43.1	58.4	67.3	65.6	87.4	99.5	99.1	0.001	87.4	73.6	62.5	58.9	55.6	63.1	69.1	80.4	74.0	76.3
	Surplus F		-17 139	-9 275	-9 762	-11 806	-7 121	-1 507	+1 088	+0 217	+3 929	+3 946	4 918	-5 484	-6 148	-11 509	-8 813	-10 383	-16 896	-28 308	-27 692	-86 762
(9	Budget Surplus B		-5 656	-2 885	-2 363	-1 527	-1 514	-5 192	4 070	+1 675	+1 562	+1 523	-2 721	-2 280	-2 627	- 0 750	-1 323	+0 724	-2 508	-3 043	-3 338	-4 381
	F(b)		58.5	56.5	58.5	70.1	81.0	84.4	91.2	99.3	100.7	0.00	89.1	76.2	57.8	59.2	61.2	55.1	52.4	57.1	61.2	67.4
(2)	Exports F(a)		53.8	39.4	42.6	9.19	84.5	91.3	119.0	109.5	102.5	100.0	85.4	60.7	39.3	36.8	35.6	30.9	30.9	47.7	0.19	63.0
en e	В		1	1		30.5	43.5	46.4	62.7	83.7	94.6	100.0	82.1	72.7	47.4	44.8	43.3	20.6	61.9	80.0	0.89	68.8
(Se Rate		1		246.2	197.0	172.1	147.2	9.66	266	99.4	0.00	101.7	105.8	112.5	117.9	128.2	136.3	127.9	90.2	•	1
	Exchange B		1	ı	ï		:	1	121.8	100.8	99.5	100.0	101.6	109.9	121.9	129.9	142.0	115.5	111.0	125.0	,	ı
(C.S. diseases)			1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939

Nominal effective exchange rate of the Franc, 1929 = 100. Sources: Belgium: R. L. Hogg (1986); France: B. Eichengreen and C. Wyplosz (1990). $\widehat{=}$

Exports 1929 = 100. Belgium and France (a): current values; France (b): volume. Sources: Belgium and France (a): B.R. Mitchell (1975); France (a) and (b): A. Sauvy (1984), vol.3. 3

Budget surplus (+) or deficit (-); Millions of Francs. Sources: Belgium: E. Moulard et J. Grauls (1954); France: INSEE (1966).

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Wholesale Prices, 1929 = 100. Sources: Belgium: I. Cassiers (1989); France: B.R. Mitchell (1975). <u>4</u>

Cost of Living, 1929 = 100. Sources: Belgium: I. Cassiers (1989); France: B.R. Mitchell (1975). (2)

Industrial Production, 1929 = 100. Sources: Belgium: I. Cassiers (1989); France: B.R. Mitchell (1975). 9