The Economic Development of Belgium since 1870

Edited by

Herman Van der Wee

Professor Emeritus at the Katholieke Universiteit, Leuven, Belgium

and

Jan Blomme

Head of the Study Department, Antwerp Port Authority, Antwerp, Belgium

THE ECONOMIC DEVELOPMENT OF MODERN EUROPE SINCE 1870

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Hourly Wage Statistics in Belgian Industry, 1919–1939

*Isabelle Cassiers**

The aim of this article is to present homogeneous wage statistics for Belgian industry in the inter-war years.

It is of undeniable interest, both for a macroeconomic analysis of this period and for a comparison of the current crisis with that of the 1930s, to be familiar with wage trends for the whole of industry and in each individual sector of industrial activity. However, the paucity of statistical data before the Second World War is well known. Prior to 1945, the Banque Nationale de Belgique (BNB) was the only body to publish a quarterly index of hourly wages, based on a continuous survey of firms scattered throughout all the sectors of industry. Unfortunately, the index did not go back beyond 1929.[1]

After 1942, Léon-Hugo Dupriez was keen to fill this gap. The Institut de Recherches Economiques et Sociales de Louvain (IRES) had just completed a reconstruction of wage trends in industry between 1830 and 1913;[2] the absence of data for the years 1919 to 1929, however, meant that a link could not be established between the IRES series and those of the BNB after 1929. Dupriez suggested, therefore, that the BNB carry out a retrospective survey (1913 and 1919–1929) similar to the continuous survey.[3] Firms were contacted immediately and in 1943 the results – called the 'Davin survey' – were collected in the statistical service (Service de la Statistique) of the Banque Nationale.

Although the series of statistics obtained were of considerable interest, they were not published.[4] Thus in 1944, Ferdnand Baudhuin wrote in his *Histoire économique de la Belgique 1914–1939* that 'while thanks to the Banque Nationale there has been a reliable index of wages since 1929, no analysis is available for the preceding period'.[5]

We are indebted to Peter Scholliers for having recently drawn attention to the existence of the 'Davin survey'.[6] Unfortunately, the data he reproduces are fragmentary and do not enable overall wage trends from 1919 to 1939 to be traced.

We intend here to combine the results of the Davin survey with those of the BNB's continuous survey with a view to presenting homogeneous statistics on wages in industry from 1919 to 1939.

1. Sources

1.1. *The BNB Continuous Survey, 1929–1939*[7]

The continuous survey carried out by the BNB in 1934 covered 178 firms or factory divisions, located in every region of Belgium and in all sectors of industrial activity. While this sample is too limited[8] to establish wage *levels*, it is sufficient for a survey of variations in wages because of the considerable interdependence of wage fluctuations in the same region and the same sector. It is for this reason that the BNB publishes only *indexes*.

The BNB asked each of the 178 firms for three items of information:

- the average hourly wage per worker in the factory or factory division. The 'average hourly wage' refers to the hourly wage of a worker and possibly of a foreman, not including the social security contributions to be paid by the firm. This remuneration includes various cash bonuses, extra payments for nightwork or Sunday work, and overtime payments. It refers therefore to the average gross income for each hour worked;
- the average hourly wage for a skilled worker 'most commonly employed in the factory';
- the average hourly wage of the 'most frequently employed' unskilled labourer.

The BNB pointed out that it was obliged to allow the firms considerable scope in determining the categories of skilled and non-skilled labour[9] because the distinction was rarely drawn. It must be expected, therefore, that the average wage does not correspond to the weighted average of wages for skilled and non-skilled labour. The indexes drawn up for both these categories are intended only to compare the variations between two particular wage groups: those of the highest and the lowest paid workers.

On the basis of the replies from firms, the BNB compiled statistics which traced the trend in average wages and representative wages, i.e. those of skilled and non-skilled labour. These three series of indexes were drawn up for the whole of industry and for the various industrial activities, i.e. 18 sectors and seven sub-sectors. The methods used by the BNB to compile the indexes are set out in section 2.1.

1.2. *The Davin Survey, 1913, 1919–1929*[10]

In suggesting to the BNB that it should undertake a retrospective survey, Dupriez recommended that research into two or three firms per sector would be sufficient, given parallel wage trends in the various factories in the same sector. The sample used by Davin is, therefore, more limited than that of the continuous survey: it deals with only 42 firms or factory divisions. Nonetheless, where it proved possible to cross-check, there was significant similarity between the results of the two surveys.

The information supplied by the firms enabled a series of statistics to be compiled that was analogous to those described above. Unfortunately, seven of the 18 sectors

of industry were not covered by the Davin survey. However, the 11 sectors included cover 77 per cent of the total number of industrial workers.

2. Methods Used in the Compilation of the Indexes

2.1. The BNB Indexes

The methods used by the BNB to compile each of the three indexes – average wages, wages for skilled labour, wages for non-skilled labour – may be summarized as follows.

Initially, all the individual data were converted into indexes with an identical base.

Then the inc.vidual indexes were grouped together by sector. The simple arithmetic mean of the individual indexes generally constitutes the sectorial index. However, in the metallurgical, textile and transport sectors, there is a distinction between sub-sectors, the indexes of which are linked by a weighted arithmetic mean.

Finally, the overall index relating to all industrial wages has been obtained by a weighted average of the sectorial indexes.

The weights allocated to each of the 18 sectors and 17 sub-sectors reflect the sectorial distribution of industrial workers which was revealed by the industrial census of 1930 (see Table, Appendix 1).

2.2. Presentation of Homogeneous Statistics from 1919 to 1939

While the entire inter-war period is covered by the BNB indexes (Davin survey and continuous survey), certain adjustments were necessary for the presentation of homogeneous statistics.

All the series are expressed here as annual indexes with the base 1929 = 100.[11]

The data relating to the years 1913 and 1919–1939 have been taken from unpublished BNB notes held in the Service de la Statistique.[12] The total indexes (whole of industry) and certain sectorial indexes have in any case been adjusted with a view to fully respecting the weightings used in subsequent years.

With regard to the period 1929–1939, the series published in the BNB's *Bulletins d'Information et de Documentation* are rounded quarterly indexes with the base 1936–1938 = 100. Original documents, kept in the bank archives, enabled annual indexes with the base 1929 = 100 to be drawn up with precision.

These same documents also provided the series relating to the coal industry which does not feature in the BNB *Bulletins*.

3. Evaluation of the Results

3.1. Homogeneity of the Series

The main criticism of the presentation of homogeneous statistics is that the two series used (1919–1929 and 1929–1939) have only one common year. Apart from the fact

that the two series were drawn up on the basis of similar surveys, several overlap points seem to indicate significant similarity between the results of the two surveys. In the case of some firms, the documents of the Davin survey trace wage trends up to 1939. Thus it proved possible to reconstitute the index for the 'coking works' sector from 1929 to 1939. Comparison of this with the index from the continuous survey reveals little divergence (Table 1).

Table 1   Comparison of the Results of the Davin Survey and the Continuous Survey; 'Coking Works' Sector

	Indexes (1929=100)		Annual growth rates (%)	
	Davin survey	Continuous survey	Davin survey	Continuous survey
1929	100.0	100.0		
1930	106.7	107.1	+ 6.7	+ 7.1
1931	97.4	98.3	− 8.7	− 8.2
1932	87.5	87.6	− 10.2	− 10.9
1933	85.3	88.4	$-1.1 \left\{ \begin{array}{l} -2.5 \end{array} \right.$	$-0.6 \left\{ \begin{array}{l} +0.9 \end{array} \right.$
1934	85.5	86.5	$+0.2$	-2.1
1935	83.9	84.6	− 1.9	− 2.2
1936	90.7	92.4	+ 8.1	+ 9.2
1937	103.5	102.5	+ 14.1	+ 10.9
1938	110.0	109.2	+ 6.3	+ 6.5
1939	110.9	110.3	+ 0.8	+ 1.0

Average Annual Growth Rates (%)		
	Davin survey	Continuous survey
1929–1939	+ 1.0	+ 1.0
1930–1935	− 4.7	− 4.6
1935–1939	+ 7.2	+ 6.9

Homogeneous statistics have another weakness. Given the absence of data for several sectors before 1929, the total index (whole of industry) was in fact only a sub-index up to then. Does not the subsequent introduction of new sectors into the calculation of the total index modify the trend in the index? In order to measure the impact of this, we compared the total index with a homogeneous sub-index, including only the sectors for which complete series are available.[13] Here again, there is no significant divergence (Table 2).

Table 2   Comparison of Two Indexes

	Indexes (1929=100)		Annual growth rates (%)	
	Total	Homogeneous sub-index	Total	Homogeneous sub-index
1920	39.2	39.7		
1921	42.5	42.5	+ 7.1	+ 7.1
1922	41.3	41.3	− 2.8	− 2.8
1923	47.7	47.9	+ 15.5	+ 16.0
1924	55.3	55.3	+ 15.9	+ 15.4
1925	55.2	54.9	− 0.2	− 0.7
1926	62.8	61.9	+ 13.8	+ 12.8
1927	78.6	75.4	+ 22.3	+ 21.8
1928	85.9	84.7	+ 11.8	+ 12.3
1929	100.0	100.0	+ 16.4	+ 18.1
1930	107.6	108.0	+ 7.6	+ 8.0
1931	101.0	99.8	− 6.1	− 7.6
1932	92.2	90.7	− 8.7	− 9.1
1933	89.5	88.5	− 2.9	− 2.4
1934	85.7	85.2	− 4.2	− 3.7
1935	81.9	81.7	− 4.4	− 4.1
1936	89.2	88.8	+ 8.9	+ 8.7
1937	99.0	100.1	+ 11.0	+ 12.7
1938	104.3	102.7	$+3.0\left\{\begin{array}{r}+ \ 5.4 \\ + \ 0.7\end{array}\right.$	$+3.0\left\{\begin{array}{r}+ \ 2.6 \\ + \ 3.4\end{array}\right.$
1939	105.0	106.2		

	Average Annual Growth Rates (%)	
	Total	Homogeneous sub-index
1920–1939	+ 5.3	+ 5.3
1930–1935	− 5.3	− 5.4
1935–1939	+ 6.4	+ 6.8

3.2. Average Wages and Wages of Skilled Labour (SL) and Non-Skilled Labour (NSL)

Any comparison of average wages and representative wages should take account of the following:

1. The series enable wage variations to be compared, but not their actual values.
2. The variations in average wages reflect variations in the structure of the work-force. Thus, when wages are fixed, increases in the proportion of non-skilled labour lead to a reduction in average wages. While, in absolute terms, average

wages always fall between two representative wages, the link is not maintained between the respective indexes. Logically speaking, the former could fall while the other two increase. Such a trend occurs in the quarries, cement factories and marble works between 1938 and 1939.[14]

3. Can it therefore be concluded that any change in the relationship between average wages and representative wages expresses a proportional change in the structure of the workforce? The answer should be in the affirmative, but with the following reservations: first, it was pointed out that the distinction between the two categories of labour has not been clearly defined by the survey and, secondly, that the methods used to compile the sectorial indexes introduce biases into the relationship between average wages and representative wages. However, comparison of the three series of indexes partially reflects changes in the structure of the workforce; such a marked trend as appears in the quarry sector at the end of the period can be due only to an increase in the proportion of non-skilled workers,

4. Commentary on the Results

4.1. Nominal Wages and Structure of the Workforce

Between 1920 and 1939 the average annual growth rate in the hourly wage for the whole of industry was 5.3 per cent. Table 3 summarizes wage trends in the main sectors. The overall trend is the same throughout (except in the coal industry): very sharp growth up to 1930, continuous decline in the crisis years, and moderate growth after 1935.

Growth rates in the 1920s were generally higher than average in the following sectors: electricity and gas, foodstuffs, quarries and the metallurgical industry (especially non-ferrous metals). However, the crisis altered this situation very quickly: renewed growth after 1935 was evident mainly in the coal, metallurgical industry and coking works.

The wages of non-skilled labour were in general more susceptible to fluctuations than those of skilled labour, rising higher in periods of growth and falling further in periods of decline. In short, the gap between these two wage categories closed slightly in the inter-war years (a 373 per cent increase in the case of SL and a 423 per cent increase in the case of NSL).

Table 3 also shows changes in the structure of the workforce. In the 'construction and public works' sector, the growth rate of average wages was generally lower than those of representative wages. It would seem, therefore, that the proportion of non-skilled labour had increased constantly. Between 1935 and 1939, an identical trend can be found in the following sectors: metallurgical industry, wood and furniture, skins and leather, art and precision work, electricity and gas, linen, cotton, hemp and jute.

One wonders if this change in the structure of the workforce could be interpreted as a sign of the transformation of production methods following the 1930–1935 crisis.

4.2. Actual Wage Levels

It was pointed out above that the samples in the BNB surveys were too limited to enable wage levels to be estimated. The coal industry is an exception since here the Bank had exhaustive statistics of hourly wages in francs. In 1929, the average hourly wage of a miner was 5.86F - 7.19F in the case of skilled labour and 5.35F in the case of non-skilled labour. With regard to other sectors, the only overall information available comes from the 1937 economic and social census. At that time, the average hourly wage of all industrial workers was 4.46F.[15]

Table 3 Average Annual Wage Growth Rates (in %)

		1920–1939	1920–1930	1930–1935	1935–1939
Industry	I	+ 5.3	+ 10.5	− 5.3	+ 6.4
	II	+ 5.1	+ 10.0	− 5.2	+ 6.6
	III	+ 5.6	+ 10.9	− 5.3	+ 6.9
Coal industry	I	+ 4.3	+ 8.5	− 7.4	+ 10.0
	II	+ 4.3	+ 8.1	− 7.4	+ 10.5
	III	—	—	− 7.5	+ 9.3
Metallurgical industry	I	+ 5.8	+ 10.7	− 4.9	+ 7.8
	II	—	—	− 4.9	+ 8.4
	III	—	—	− 4.9	+ 8.3
Textiles*	I	+ 5.1	+ 10.4	− 5.4	+ 5.7
	II	+ 5.0	+ 10.1	− 5.4	+ 5.7
	III	+ 5.3	+ 10.5	− 5.0	+ 5.9
Foodstuffs	I	+ 6.3	+ 12.6	− 3.4	+ 3.7
	II	+ 6.0	+ 11.9	− 2.9	+ 3.4
	III	+ 6.7	+ 13.4	− 3.3	+ 3.8
Construction and public works	I	+ 5.3	+ 11.5	− 6.2	+ 5.3
	II	+ 5.5	+ 11.8	− 5.9	+ 5.5
	III	+ 5.8	+ 12.6	− 6.8	+ 5.9
Wood and furniture	I	—	—	− 5.7	+ 5.3
	II	—	—	− 5.5	+ 5.8
	III	—	—	− 6.9	+ 6.5

I: all workers
II: skilled labour
III: non-skilled labour
*First group only in the first two columns.

Table 4 gives a breakdown of workers on the basis of their hourly wage, which varies from less than 1F to 10F.

The table reveals significant differences between the sectors. Wages are higher than average in mining, transport, the metallurgical industry, the quarry and construction

industries and in the case of art and precision work. On the other hand, the following sectors are characterized by low wage levels: textiles, tobacco, foodstuffs, skins and leather, paper. It will be noted that low wages are to be found mainly in those industries producing consumer goods. Wage disparities between producer- and consumer-goods industries decrease during periods of crisis but become more marked during periods of growth: average annual rates of change in wages are from –3.3 per cent and –2.8 per cent between 1929 and 1935, and from 6.6 per cent and 5.1 per cent between 1935 and 1939 respectively.[16]

Table 4   Breakdown of Workers (%) according to Hourly Wage in 1937 (average wage: 4.46F)

	Less than 4F	From 4F to less than 5F	5F and more
Whole of industry	35.3%	27.4%	36.1%
Mines*	9.6	30.1	59.2
Quarries	16.7	41.8	39.4
Metallurgical industry	25.0	26.3	48.1
Ceramics	33.6	38.5	26.7
Glass	37.9	23.4	38.4
Chemicals**	30.2	33.4	35.5
Textiles and clothing	69.5	17.4	11.4
Foodstuffs	44.7	27.4	26.9
Construction	14.4	46.6	38.6
Wood and furniture	37.3	27.9	31.5
Skins and leather	52.2	27.1	19.3
Tobacco	66.3	16.1	15.9
Paper	45.7	31.8	21.5
Books	40.9	11.6	47.3
Art and precision work	31.9	10.5	56.9
Transport***	19.3	17.0	61.4

*including coking works
**including gas and electricity
***partial survey

Source: Economic and social census of 27 February 1937.

4.3. Real Hourly Wage and Purchasing Power

If cost-of-living trends are taken into account (Table 5), it is apparent that the real hourly wage increased by only 22 per cent (28 per cent, if one refers to the retail price index) between 1921 and 1939, while nominal wages increased by 147 per cent.

After a very considerable increase, real wages fell between 1922 and 1927 (–2.8 per cent per year), then increased quickly until 1932 (.6 per cent per year). Thus

real wages increased during the early years of the crisis. However, one must be careful not to draw hasty conclusions about wage-earners' overall purchasing power.

As P. Scholliers has very rightly pointed out, increases in the real hourly wage and in purchasing power were often – erroneously – confused. We dispute the widely accepted assertion that, as early as 1920, purchasing power had regained its prewar level. The significant reduction in working hours in 1919 and 1920 resulted in a considerably higher increase in the hourly wage than in the daily wage. If one looks at the latter, purchasing power seems rather to have fallen between 1914 and 1920.[17] Unfortunately there is no information available about real trends in working hours.

Changes in real wages should also be compared with changes in employment levels. The number of workers employed in industry fell constantly between 1927 and 1934. It is well known that the crisis led to massive unemployment. It is therefore likely that, despite increases in the real hourly wage, workers' overall purchasing power was affected by the crisis. Indeed, the total wage bill of workers insured against unemployment fell by 32 per cent between 1930 and 1932, and by 44 per cent between 1930 and 1934, notwithstanding regular increases in the number of sickness fund members.[18]

Table 5   Indexes of Retail Prices, Cost of Living and Real Wages (1929=100)

	Retail price index (1)	Cost of living index (2)	Real hourly wage	
			Refers to (1)	Refers to (2)
1913	11.4	—	71.9	—
1920	52.1	—	76.2	—
1921	45.7	45.5	93.0	93.4
1922	42.7	42.4	96.7	97.4
1923	49.0	49.6	97.3	96.2
1924	57.3	57.5	96.5	96.2
1925	59.3	61.1	93.1	90.3
1926	70.7	73.4	88.6	85.6
1927	89.9	90.9	85.4	84.5
1928	93.8	94.2	91.6	91.2
1929	100.0	100.0	100.0	100.0
1930	100.0	102.7	107.6	104.8
1931	91.3	92.3	110.6	109.4
1932	82.4	83.2	111.9	110.8
1933	80.7	82.3	110.9	108.7
1934	76.2	79.1	112.5	108.3
1935	74.9	79.5	109.3	103.0
1936	78.5	84.1	113.6	106.1
1937	84.1	90.5	117.7	109.4
1938	87.2	93.2	119.6	111.9
1939	88.0	92.3	119.3	113.8

However, available statistical data do not enable trends in wage costs to be measured with precision; some estimates show, on the contrary, a slight increase in the purchasing power of wages throughout the crisis.[19]

Table 6   Impact of the Crisis on Wages

	1930–1932	1930–1934
Hourly wage in industry		
nominal variations	– 14.3%	– 20.4%
real variations (/COL)	+ 5.7%	+ 3.3%
Total wages bill		
nominal variations	– 31.9%	– 44.3%
real variations	– 15.9%	– 27.7%
Total wages (estimate)		
nominal variations	– 16.7%	– 22.2%
real variations	+ 2.9%	+ 1.0%

4.4.   Trend in the Gross Hourly Wage over a Long Period

The continuous survey of wages compiled by the BNB in 1934 is still valid today; it is therefore possible to compare trends in the average gross wage earned per hour[20] by industrial workers before and after the Second World War (Table 7).

Although average annual growth rates of nominal wages from 1919 to 1939 (8.3 per cent) and from 1948 to 1978 (8.2 per cent) are identical, a comparison of ten-year trends shows considerable differences.

In the two decades between the wars, there were contrasting trends. While the fall in nominal wages and prices that occurred between 1930 and 1935 was not repeated after the war, it should be noted that the exceptionally high growth rates of the 1920s have recurred only during the last ten years.

With regard to real wages, Table 7 shows growth accelerating from decade to decade, with the exception of the 1930s.

Finally, it is clear that the gap between the wages of skilled and non-skilled workers is progressively closing.

5.   Conclusions

5.1.   Summary

This brief analysis of the movement of wages in the inter-war years leads to the following main conclusions:

● the average nominal wage increased at an exceptionally high annual rate (10.5 per cent) during the first decade, then fell significantly between 1930 and 1935.

At the end of the period, there was moderate growth (6.4 per cent). With the exception of the five years of crisis, the growth in nominal wages (9.3 per cent per year) was therefore clearly much more rapid at this time than after the Second World War: not until 1970–1977 was this growth rate surpassed.

- the alternating periods of growth and decline in wage levels modified sectorial differences. Given the lack of data on actual wage levels, it is impossible to comment on the extent of these differences. As a general rule, hourly wages were lower in consumer goods industries.
- A permanent, albeit slow, closing of the gap between the wages of skilled and non-skilled workers was as clear at that time as after the Second World War.
- As opposed to the growth of nominal wages, the growth of real wages was relatively slow (2.4 per cent per year, on average). The exceptional rate of inflation (16 per cent) recorded between 1922 and 1927 explains the persistent fall in real wages during those years. On the other hand, between 1927 and 1932 the average growth rate of real wages (5.6 per cent) was greater than average after 1945.

While real *hourly* wages continued to grow during the early years of the crisis, this undoubtedly did not apply to workers' overall purchasing power on account of the massive unemployment that occurred after 1930.

Table 7   Trend in Gross Average Wages Per Hour Worked

	Nominal wage			Retail price	Average real wage
	SL	NSL	Total		
1913	2.0	1.6	1.7	3.3	52
1923	11	10	10	14	72
1928	19	18	18	27	68
1933	19	19	19	23	82
1938	23	23	22	25	88
1948	81	80	79	95	84
1953	100	100	100	100	100
1958	129	129	131	108	121
1963	160	162	168	115	146
1968	235	245	252	137	183
1973	417	432	452	174	260
1978	784	831	850	270	314
Average annual growth rates (%)					
1920–1930	10.4	10.8	10.5	6.7	3.5
1930–1939	–0.1	–0.5	–0.3	–1.4	1.2
1948–1958	4.8	4.9	5.1	1.3	3.8
1958–1968	6.2	6.8	6.8	2.4	4.3
1968–1978	12.8	13.0	12.9	7.0	5.5

5.2. Research Prospects

The existence of wage statistics enables research to be carried out on the mechanisms of wage formation that prevailed in the inter-war years. The investigation of these mechanisms should be a rich source for the economic analysis of this period which was marked by the emergence of new institutional forms of wage regulation. Indeed, it is known that the practice of indexing wages to the cost of living was introduced in Belgium from the 1920s onwards. Figure 3 (see Appendix 2) shows a very clear link between changes in nominal wages and in the cost of living throughout the period. Note, however, that these two variables are subject to changes in industrial production (Figure 4).

The 1929 crisis introduced relative autonomy of prices and wages in relation to production, but on the contrary accentuated the dependence of wages on the level of employment. The Phillips curve (negative link between rate of change in the nominal wage and the unemployment rate) is very clear between 1929 and 1932.

Changes in real wages can be linked to variations in productivity. It will be noted that in the coal industry there was a clear correlation between these two variables up to 1931 (Figure 5). In the whole of industry, it is apparent that the remarkable growth of real wages in 1928 and 1929 may be put down to a rise in productivity (an increase in industrial production concomitant with a reduction in employment). However, the crisis also upset the link between real wages and productivity: the sharp increase in workers' output recorded in various sectors from 1932 to 1934 was accompanied by a fall in real wages (Figure 1); moreover the rapid growth of the latter in 1936 and 1937 can be explained to a greater extent by the recovery of employment than by renewed increases in productivity.

The analysis of wage determinants would undoubtedly gain from taking into account sectorial differences and, in particular, the various alterations of wages in the 'sheltered' or domestic sector, and in the 'non-sheltered' or international sector (Figure 2).

Notes

*   I should like to thank the Département des Etudes at the Banque Nationale de Belgique for providing me with the documents necessary for the completion of this study.
1. Since 1922 the BNB had been publishing an 'index of average hourly wages in a certain number of Belgian and Luxemburg factories'. However, these data were the result of much too limited a survey to be reliable. See 'Statistiques économiques belges, 1929–1940', *Bulletin d'Information et de Documentation de la BNB*, No. spécial, 1946, p. 142.
2. M. Peeters, 'L'évolution des salaires en Belgique de 1831 à 1913', *Bulletin de l'IRES*, August 1939, pp. 389–420.
3. 'Note sur l'établissement d'une statistique des salaires de 1919 à 1929', letter from L.-H. Dupriez to the BNB, 12 January 1942. BNB archives, 'Enquête Davin' (Davin survey), no. 43–VI-5.
4. They were partly used at the IRES in 1946. See R. Dehem, 'Emploi et revenus en économie ouverte: Théorie et application à l'évolution belge et britannique de 1919 à 1939', *Bulletin de l'IRES*, January 1946, pp. 43–119.

5. F. Baudhuin, *Histoire économique de la Belgique, 1919–1939*, Bruylant, Brussels, 1944, Vol. 2, p. 234.

6. P. Scholliers, *Lonen in de Belgische nijverheid, 1914–1940: de enquête Davin*, Lonen, Loonreeks 2, Centrum voor Hedendaagse Sociale Geschiedenis, VUB, Brussels, 1979.

7. For more details we shall refer (a) to a quarterly salary index: *Bulletin d'Information et de Documentation de la BNB*, 10 November 1934, IXth year, vol. II, pp. 290–93, and (b) to 'Belgian Economic Statistics', *op. cit.*, pp. 193–203.

8. The inventories for 1930 and 1937 mention 760 and 484 active firms respectively.

9. The same lack of precision is to be found in the current BNB statistics. Cf. *Statistiques économiques belges, 1960–1970*, BNB, p. 74.

10. 'Enquête Davin', Département des Études de la Banque Nationale de Belgique, Archives no. 43–VI-5. There is a general commentary on the Davin survey in P. Scholliers, *op. cit.*

11. The annual index does not correspond systematically to the average of quarterly indexes, as these refer simply to four months of the year (January, April, July and October; or March, June, September and December).

12. *Indice des salaires horaires en 1913 et de 1919 à 1939. Base: année 1929 = 100. Indice général et Indices des groupes.* Département des Etudes de la Banque Nationale de Belgique, Service de la Statistique, File 69, No. 1S16/00/03/02.

13. Coal industry; coking plants; quarries; metal industry; ceramics; linen, cotton, hemp and jute; foodstuffs; construction industry and public works; electricity and gas. These sectors account for 62 per cent of industrial labour.

14. A simulation indicates that such results do not require a major change in the make-up of the labour force: let us suppose that the quarry index comes from the data of a single firm and that the average wage is equal to the weighted average of typical wages, i.e.

   α the proportion of skilled labour (and hours worked)
   β the proportion of non-skilled labour
   $\alpha + \beta = 1$

	Wage in francs			Indexes		
	Total	SL	NSL	Total	SL	NSL
1929	5.00	6.00 ($\alpha = 0.50$)	4.00 ($\beta = 0.50$)	100.0	100.0	100.0
1938	5.03	6.18 ($\alpha = 0.45$)	4.07 ($\beta = 0.55$)	100.5	103.0	101.8
1939	4.98	6.20 ($\alpha = 0.42$)	4.10 ($\beta = 0.58$)	99.6	103.4	102.6

15. *Recensement économique et social du 27 février 1937*, OCS, Vol. 4, p. 43.

16. Belgian economic statistics, 1929–1940, *op. cit.*, pp. 198–9.

17. P. Scholliers, *op. cit.*, p. 4.

18. Belgian economic statistics, *op. cit.*, pp. 204 and 379.

19. Total wages are put at 27 million francs in 1930, 22.5 million in 1932 and 21 million in 1934. See Van der Aa, 'Etudes sur le Revenu National', *Bulletin de Statistique*, 1946, No. 12, p. 1125.

20. The gross wage should not be confused with real wages earned by workers, since it includes social security contributions payable by them.

Appendix 1   Index of Hourly Wages (1929 = 100)

| | WHOLE OF INDUSTRY | | |
	Total labour force	Skilled labour	Non-skilled labour
1913	8.2	8.8	7.7
1919	21.3	22.1	20.4
1920	39.7	40.7	38.2
1921	42.5	43.7	42.2
1922	41.3	43.5	41.8
1923	47.7	49.6	45.3
1924	55.3	56.3	51.9
1925	55.2	56.3	53.4
1926	62.8	62.7	60.1
1927	76.8	75.4	71.6
1928	85.9	84.4	8⁻.0
1929	100.0	100.0	1CJ.0
1930	107.6	105.7	107.2
1931	101.0	98.8	100.1
1932	92.2	89.6	90.7
1933	89.5	87.3	88.1
1934	85.7	83.9	84.6
1935	81.9	81.1	81.6
1936	89.2	88.1	91.1
1937	99.0	98.6	102.5
1938	104.3	108.5	106.3
1939	105.0	104.7	106.7

| | COAL INDUSTRY | | |
Weight	10		
1913	10.1	10.3	—
1919	26.5	28.9	—
1920	47.3	49.2	—
1921	48.0	49.8	—
1922	42.8	44.1	—
1923	53.8	55.5	—
1924	63.0	64.7	—
1925	55.1	54.9	—
1926	64.5	64.1	—
1927	85.2	85.1	—
1928	86.7	85.5	85.0
1929	100.0	100.0	100.0
1930	106.7	107.1	105.8
1931	92.2	91.8	90.9
1932	77.9	78.1	77.2
1933	75.6	75.6	74.8
1934	75.0	75.2	74.1
1935	72.6	72.9	71.6
1936	80.7	81.1	79.4
1937	99.4	100.1	97.3
1938	107.0	108.8	103.4
1939	106.2	108.5	102.1

	COKING WORKS			QUARRIES, CEMENT FACTORIES, MARBLE WORKS			METALLURGICAL INDUSTRY		
Weight	1			2.5			20		
	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour
1913	—	—	—	8.7	8.8	8.3	8.1	—	—
1919	18.3	–	—	20.7	20.8	20.9	20.7	—	—
1920	43.0	—	—	36.4	36.1	37.6	38.8	—	—
1921	44.0	—	—	40.1	40.4	41.5	42.0	—	—
1922	38.6	—	—	41.3	40.6	42.0	40.6	—	—
1923	45.9	47.6	42.8	47.1	46.7	47.1	47.6	—	—
1924	51.8	51.1	50.3	55.7	55.6	54.9	55.1	—	—
1925	53.6	61.1	50.3	57.0	56.9	56.7	56.1	—	—
1926	52.0	60.3	51.8	59.8	60.6	58.1	63.3	—	—
1927	76.3	71.8	63.5	71.4	70.9	71.3	75.9	—	—
1928	84.5	87.7	82.1	80.1	79.9	79.5	85.6	—	—
1929	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1930	107.1	108.3	107.9	111.2	112.6	113.2	107.4	103.4	105.6
1931	98.3	103.2	105.1	105.4	104.6	108.0	98.7	95.5	97.5
1932	87.6	89.9	90.6	95.5	94.2	98.7	91.7	88.0	89.3
1933	88.4	89.7	91.6	90.7	90.0	94.0	91.7	87.4	87.7
1934	86.5	87.7	90.1	84.9	85.4	88.5	88.8	85.5	86.0
1935	84.6	86.8	87.6	79.4	81.9	82.2	83.7	80.6	82.0
1936	92.4	92.3	94.2	86.4	88.6	87.9	92.3	89.3	92.3
1937	102.5	101.4	103.5	95.8	97.8	97.6	105.4	103.7	107.3
1938	109.2	103.2	105.5	100.5	103.0	101.8	102.5	109.4	112.6
1939	110.3	104.4	106.3	99.6	103.4	102.6	113.0	111.1	113.0

Weight	IRON & STEEL 7.5			NON-FERROUS METALS 2.5			FOUNDRIES, MECHANICAL & METAL CONSTRUCTION 10		
	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour
1913	8.4	—	—	7.6	10.4	—	8.1	9.7	8.9
1919	19.0	—	—	25.2	25.8	—	20.8	21.6	22.1
1920	40.3	—	—	34.9	42.7	—	38.7	40.6	43.3
1921	42.3	—	—	38.4	47.3	—	42.6	44.3	48.2
1922	39.8	—	—	40.1	47.0	—	41.4	43.2	44.0
1923	47.8	—	—	52.8	56.7	—	46.1	47.2	48.0
1924	55.1	—	—	62.3	58.2	—	53.2	55.3	56.3
1925	55.7	—	—	64.7	60.5	—	54.2	56.8	57.3
1926	63.0	—	—	72.8	67.1	—	61.2	63.8	64.2
1927	77.5	—	—	83.1	77.6	—	72.8	76.0	75.9
1928	87.1	—	—	89.0	84.3	—	83.6	86.1	85.4
1929	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1930	103.9	98.4	100.2	108.4	108.2	108.5	110.1	106.2	109.5
1931	92.0	89.3	89.7	98.9	98.1	100.9	104.4	100.4	103.5
1932	85.9	82.0	82.0	90.6	88.5	92.9	97.0	92.8	94.6
1933	86.1	82.3	80.4	89.9	87.7	92.1	96.9	91.4	92.8
1934	84.8	83.1	81.0	88.9	86.8	91.7	92.3	87.0	88.7
1935	81.2	78.6	76.5	85.7	81.8	87.8	85.3	82.0	84.6
1936	92.5	88.0	89.2	93.5	90.1	96.4	91.9	80.9	93.5
1937	107.3	105.4	110.7	105.1	102.0	109.2	103.9	102.7	104.0
1938	114.0	114.0	116.5	108.8	105.8	113.2	109.7	106.8	109.4
1939	118.0	117.0	117.6	109.5	106.4	112.5	110.2	107.9	109.5

Weight	CERAMICS 2.5			GLASS 2			CHEMICALS 3		
	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour
1913	7.7	9.0	—	—	—	—	—	—	—
1919	—	24.2	24.0	—	—	—	—	—	—
1920	45.5	40.6	44.9	—	47.4	47.4	—	—	—
1921	46.4	44.6	51.1	—	50.4	48.5	—	—	—
1922	48.0	46.3	51.6	—	50.1	47.6	—	—	—
1923	53.3	54.9	56.1	—	57.5	53.7	44.5	48.6	44.0
1924	60.6	64.9	61.8	—	66.4	58.3	44.5	52.9	44.8
1925	60.0	67.5	59.9	—	69.0	60.9	45.3	52.9	44.8
1926	68.2	74.2	67.2	—	76.3	70.2	45.3	52.9	44.8
1927	72.5	78.2	71.8	—	86.5	82.8	56.8	61.4	52.9
1928	80.9	83.1	81.7	—	89.4	87.4	77.4	81.5	76.7
1929	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1930	111.1	106.7	107.7	103.0	102.5	100.4	106.8	104.9	106.9
1931	105.4	102.2	98.9	96.3	95.3	96.6	101.3	99.6	100.9
1932	98.5	92.6	91.3	91.9	89.0	88.1	90.9	88.8	88.7
1933	92.7	90.1	88.9	87.9	86.7	84.0	87.1	83.9	87.7
1934	86.5	82.2	82.4	84.6	83.6	80.5	82.8	80.2	80.2
1935	83.9	81.0	81.4	81.5	80.9	77.6	79.5	77.3	77.4
1936	90.4	84.2	89.1	85.6	84.9	86.9	86.8	84.0	86.6
1937	100.0	92.1	99.1	93.2	93.9	98.0	96.5	92.6	98.5
1938	102.8	95.9	102.6	96.9	96.0	99.9	100.9	96.9	102.9
1939	104.5	98.3	104.4	98.7	97.4	100.2	101.7	97.8	103.9

Weight	TEXTILES incl.: 20			Linen, cotton, hemp, jute 10			Wool, carpets, hosiery, clothing industry 10		
	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour
1913	—	—	—	7.0	7.4	7.1	—	—	—
1919	—	—	—	21.2	20.7	21.0	—	—	—
1920	—	—	—	38.6	39.2	37.9	—	—	—
1921	—	—	—	44.6	41.3	41.3	—	—	—
1922	—	—	—	40.3	41.6	42.4	—	—	—
1923	—	—	—	45.9	45.2	46.9	—	—	—
1924	56.8	—	—	54.4	53.8	54.5	59.1	—	—
1925	58.2	—	—	56.1	55.8	56.5	60.2	—	—
1926	68.6	—	—	63.3	63.9	64.4	73.9	—	—
1927	87.1	—	—	83.3	84.6	84.6	90.9	—	—
1928	92.3	—	—	89.0	89.3	87.2	95.5	—	—
1929	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1930	103.6	103.4	105.0	103.4	102.0	103.3	103.7	104.7	106.6
1931	98.2	97.7	101.1	98.0	96.4	100.1	98.3	99.1	101.8
1932	90.3	88.5	91.4	90.0	85.9	90.7	90.8	91.3	92.0
1933	89.0	88.0	90.8	88.8	85.3	90.3	89.4	90.9	91.2
1934	83.2	82.1	84.2	82.7	79.5	81.6	83.6	84.9	86.8
1935	78.7	78.3	81.4	80.0	77.8	80.3	77.4	78.9	82.5
1936	86.8	86.2	94.6	87.9	87.6	91.8	85.9	84.7	97.4
1937	93.9	93.4	101.6	95.2	95.5	98.5	92.8	91.2	104.7
1938	98.3	97.2	102.5	99.1	99.0	101.3	97.7	95.3	103.4
1939	98.4	97.6	102.3	99.2	99.5	101.8	97.7	97.5	102.7

Weight	FOODSTUFFS 5			CONSTRUCTION & PUBLIC WORKS 10			ELECTRICITY & GAS 1		
	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour
1913	7.4	8.1	7.5	8.2	7.7	7.1	6.4	7.2	6.3
1919	17.7	18.5	17.3	20.4	19.2	19.2	13.8	16.6	16.6
1920	33.8	35.8	31.5	37.6	36.5	33.8	32.4	33.5	35.1
1921	38.9	41.4	37.8	37.0	38.9	35.6	42.5	42.7	45.2
1922	39.9	42.4	38.7	41.5	43.4	36.5	43.1	44.0	45.1
1923	43.7	45.3	42.8	45.8	49.2	37.5	49.3	52.2	50.5
1924	46.9	48.0	45.3	51.8	52.5	45.6	55.3	57.9	57.1
1925	48.3	49.6	46.9	52.3	54.8	48.1	59.4	60.0	58.9
1926	58.2	58.6	56.6	55.3	57.5	54.8	66.5	66.5	67.0
1927	68.9	68.6	67.3	61.6	61.3	59.8	78.0	78.8	81.2
1928	79.5	79.5	77.8	81.4	80.3	78.8	84.7	84.1	86.8
1929	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1930	110.9	110.2	110.8	111.7	111.0	111.0	113.2	113.0	114.6
1931	109.0	109.7	107.6	103.5	103.2	101.7	108.3	105.5 ·	108.7
1932	102.1	103.3	101.4	92.3	92.3	89.7	103.7	99.0	99.6
1933	99.3	101.2	99.5	86.5	87.4	83.6	101.5	98.2	98.8
1934	95.8	97.7	96.3	83.3	83.8	80.5	99.8	95.7	98.1
1935	93.3	95.2	93.7	81.0	81.8	78.2	98.5	94.3	96.9
1936	96.7	98.6	97.5	84.5	85.2	82.5	101.2	97.2	99.9
1937	105.0	105.4	106.3	92.7	93.5	92.3	107.8	104.4	108.1
1938	107.8	108.3	108.2	98.4	99.4	97.7	113.3	109.7	113.1
1939	107.8	108.9	108.6	99.5	101.4	98.3	116.6	112.8	116.8

Weight	WOOD & FURNITURE 7			LEATHER & SKINS 3			TOBACCO 1		
	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour
1913	—	—	—	—	—	—	—	—	—
1919	—	—	—	—	—	—	—	—	—
1920	—	—	—	—	—	—	—	—	—
1921	—	—	—	—	—	—	—	—	—
1922	—	—	—	—	—	—	—	—	—
1923	—	—	—	—	—	—	—	—	—
1924	—	—	—	—	—	—	—	—	—
1925	—	—	—	—	—	—	—	—	—
1926	—	—	—	—	—	—	—	—	—
1927	—	—	—	—	—	—	—	—	—
1928	—	—	—	—	—	—	—	—	—
1929	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1930	110.4	108.3	110.5	104.5	105.3	105.2	105.4	104.5	110.7
1931	105.7	103.7	104.3	98.0	98.1	98.5	102.6	101.5	108.7
1932	97.2	94.3	93.5	89.7	88.7	89.2	97.9	96.9	105.5
1933	92.6	90.4	89.7	86.1	85.7	87.0	96.4	95.7	101.9
1934	86.4	84.9	83.1	83.0	82.3	82.1	89.7	90.7	99.7
1935	82.5	81.7	77.2	79.7	79.3	76.8	88.8	89.4	95.9
1936	88.0	89.7	86.1	87.4	85.4	87.7	100.9	99.4	106.6
1937	99.4	96.4	94.1	96.5	94.7	98.0	103.6	107.0	113.4
1938	99.7	101.5	98.4	99.5	99.0	101.5	108.5	110.4	117.4
1939	101.4	102.5	99.5	102.5	102.8	103.6	103.8	109.0	116.7

Weight	PAPER: factories 1			PAPER: printing & processing 1.5			ART & PRECISION WORK 2		
	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour
1913	—	—	—	—	—	—	—	—	—
1919	—	—	—	—	—	—	—	—	—
1920	—	—	—	—	—	—	—	—	—
1921	—	—	—	—	—	—	—	—	—
1922	—	—	—	—	—	—	—	—	—
1923	—	—	—	—	—	—	—	—	—
1924	—	—	—	—	—	—	—	—	—
1925	—	—	—	—	—	—	—	—	—
1926	—	—	—	—	—	—	—	—	—
1927	—	—	—	—	—	—	—	—	—
1928	—	—	—	—	—	—	—	—	—
1929	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1930	106.5	102.0	102.8	109.6	108.5	107.6	110.6	107.8	114.5
1931	103.8	102.8	101.6	110.3	108.7	107.8	107.0	105.8	106.9
1932	90.3	96.7	94.6	106.2	104.4	105.0	96.7	96.2	97.3
1933	90.1	91.6	89.7	103.8	102.3	102.2	96.1	95.9	99.4
1934	88.8	88.7	86.7	100.0	99.9	99.0	91.1	90.0	98.3
1935	86.2	88.5	85.9	97.0	96.2	95.4	85.6	85.2	98.9
1936	91.9	94.4	91.4	102.0	100.7	103.2	95.0	92.6	109.2
1937	98.4	101.0	97.8	108.8	107.2	110.5	103.7	100.1	125.0
1938	101.7	104.5	101.3	113.5	110.6	117.0	110.8	106.9	133.2
1939	103.0	105.6	102.5	113.0	111.8	113.0	108.9	112.6	134.5

| Weight	TRANSPORT incl.: 7.5			Port works, lorry drivers 1.5			Railways 6		
	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour	Total labour force	Skilled labour	Non-skilled labour
1913	—	—	—	—	—	—	—	—	—
1919	—	—	—	—	—	—	—	—	—
1920	—	—	—	—	—	—	—	—	—
1921	—	—	—	—	—	—	—	—	—
1922	—	—	—	—	—	—	—	—	—
1923	—	—	—	—	—	—	—	—	—
1924	—	—	—	—	—	—	—	—	—
1925	—	—	—	—	—	—	—	—	—
1926	—	—	—	—	—	—	—	—	—
1927	—	—	—	—	—	—	—	—	—
1928	—	—	—	—	—	—	—	—	—
1929	100.0	—	—	100.0	100.0	100.0	100.0	—	—
1930	109.9	—	—	101.9	103.3	106.9	112.3	—	—
1931	111.7	—	—	97.2	96.5	102.1	116.1	—	—
1932	105.8	—	—	89.8	89.7	98.4	110.5	—	—
1933	99.6	—	—	86.8	85.7	96.7	103.4	—	—
1934	94.1	—	—	84.1	85.0	93.9	97.1	—	—
1935	90.6	—	—	82.3	86.6	94.5	93.1	—	—
1936	101.0	—	—	94.4	94.2	103.9	102.9	—	—
1937	108.2	—	—	107.5	109.2	121.2	108.7	—	—
1938	114.2	—	—	109.8	109.6	125.8	115.6	—	—
1939	115.2	—	—	107.5	107.9	118.5	117.5	—	—

Appendix 2 Figures
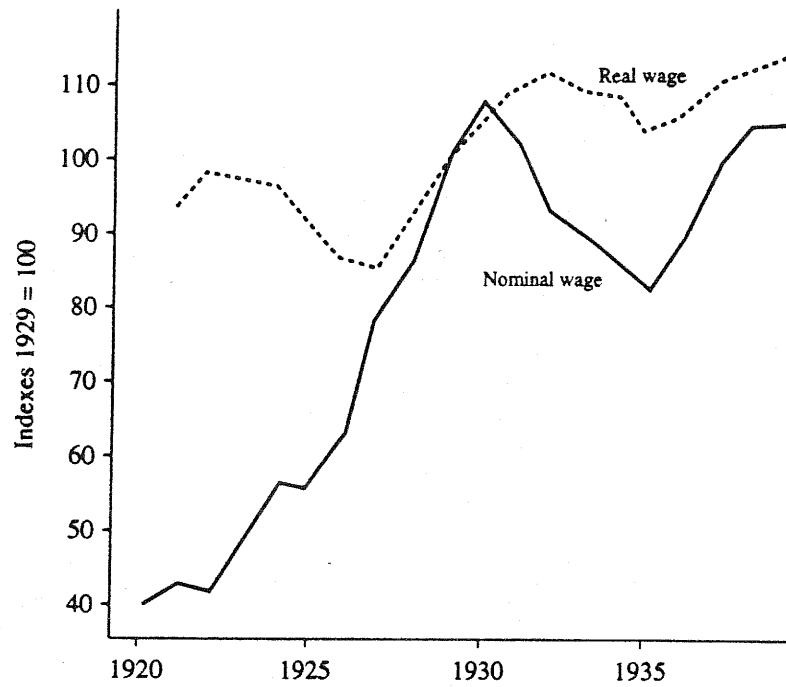
Figure 1 Real wages compared with the cost of living
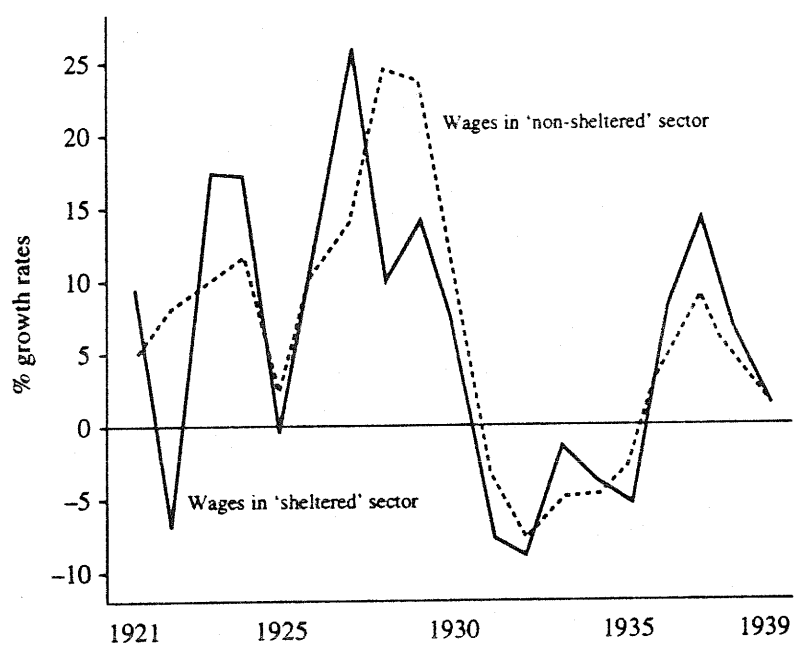
Figure 2   'Sheltered' sector: construction and public works, foodstuffs, gas and electricity, wood and furniture, printing and paper processing, railways.
'Non-sheltered' sector: coal industry, metallurgical industry, textiles, chemicals, skins and leather, glassware.

Source: R. Dehem, *op. cit.*
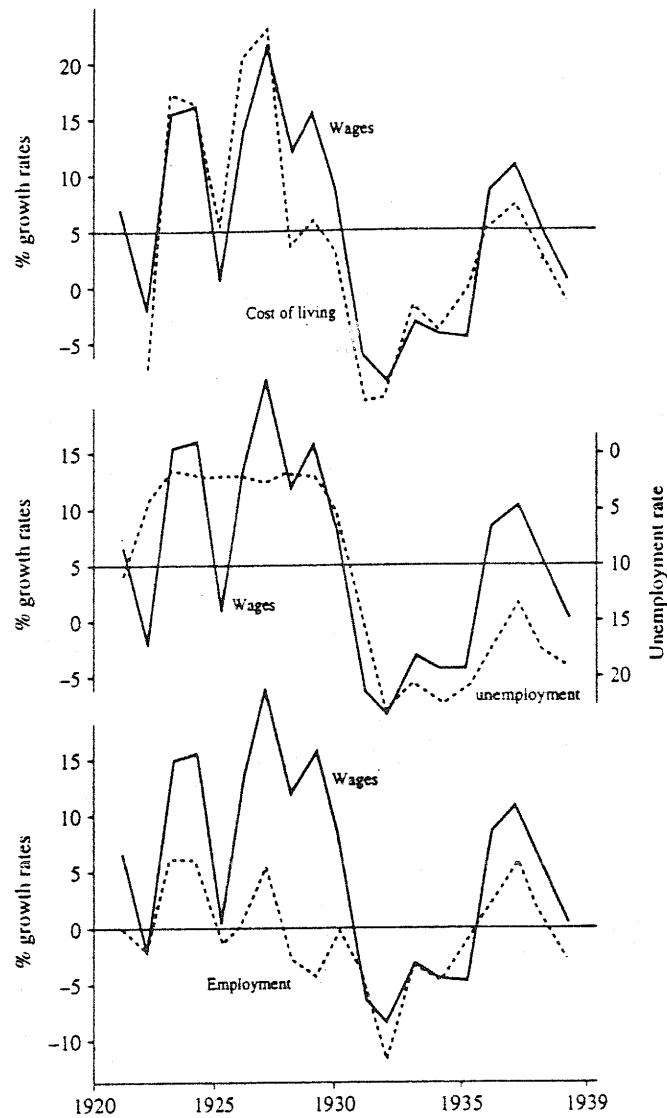
Figure 3   The level of unemployment is measured by the total number of days lost as a percentage of the total number of days that the insured party could have worked. The order of the unemployment level was reversed to facilitate comparisons between unemployment and wage variations

*There is no annual figure for industrial employment. The variations in employment recorded in this graph relate to basic sectors: coal-mining, metal and mineral mining; quarries, metallurgical industry, coking works and agglomerates.

Sources: BNB, *Annuaires Statistiques de la Belgique,* INS.
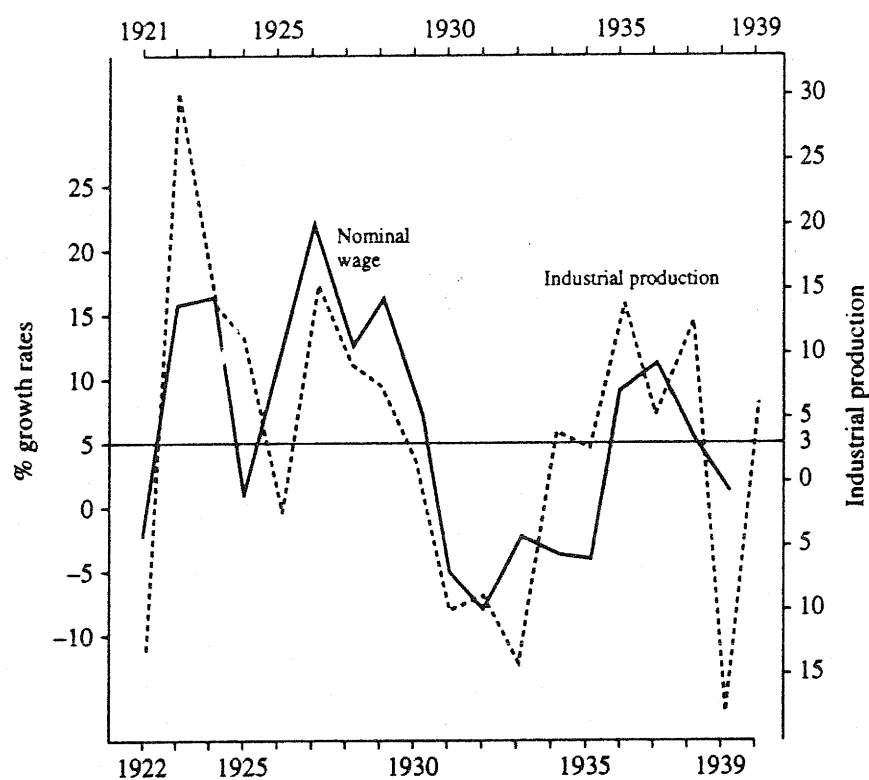
Figure 4   Index of the volume of industrial production.
The wage variations at (t) were compared with the variations in production at (t-1).
The variations in production relate to the upper abscissa and the ordinate on the right.

Source: IRES.
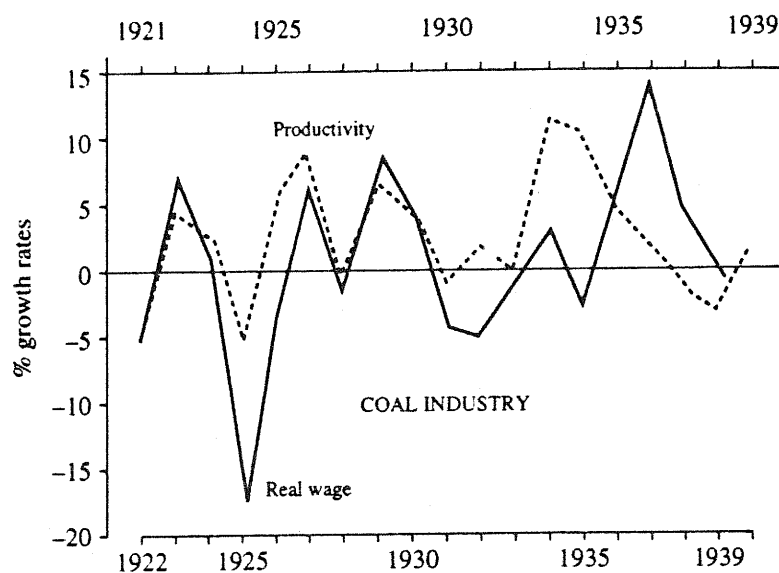
Figure 5

The real wages are those of miners (compared with the cost of living).

Productivity is measured in terms of the annual volume of production per worker.

From 1929, we used production per worker per day present to suppress the negative effect of partial unemployment and strikes.

Unfortunately, it has been impossible to estimate hourly productivity, whose growth rate would certainly have been higher at the beginning of the period.

The variations in real wages at (t) are compared with the variations in productivity at (t-1).

Variations in productivity relate to the upper abscissa.

Sources: Annuaires Statistiques de la Belgique and BNB.