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WAGES AND PRODUCTIVITY IN BELGIUM, 1910–60

Isabelle Cassiers and Peter Solar

INTRODUCTION

In the middle of the twentieth century Belgium seems to have undergone a fairly rapid transformation from a relatively low wage economy to a high wage economy. How could Belgian business handle such a change in its cost structure? Was it through exceptionally fast technical progress? The best known statistics concerning productivity growth put Belgium near the bottom of the European league table in this period, so that its gains in the relative wages takes remain something of a mystery.

Here we make a first, very tentative, approach to this problem. We try to assemble the 'facts', in so far as they are known, more in order to raise questions for research than to give definitive answers. In fact, though the problem that interests us spans the entire period from 1910 to 1960, we have detailed information to offer only on the years up to the Second World War. Our results for the interwar years will thus be the basis for putting forward some hypotheses for testing on the post-war years.

The paper has three parts. In the first section we show that between roughly 1930 and 1950 Belgium went from being a low wage economy to being one characterized by relatively high wages. The other two sections deal with the possible causes of this transformation. Section II summarizes and discusses diverse data on Belgium labour productivity change. Section III demonstrates the importance of foreign trade for the Belgian economy and explores some aspects of the relationship between labour productivity and wages in the case of this small open economy.

I. FROM LOW TO HIGH WAGES

It is a commonplace of Belgian economic history that the country's economy was characterized by low wages in the nineteenth and early twentieth centuries. Despite precocious industrialization, wages lay below those of its industrial rivals at the end of the nineteenth century. Rowntree (1910), in his classic study, noted that despite being a great centre of industry, Belgium had industrial wages well below British levels and that undernourishment and

poverty were widespread. Zamagni (1989, pp. 118–19), drawing on existing series for yearly wages and on Board of Trade reports from c. 1905, shows that Belgian industrial wages, when converted at official exchange rates, were less than two-thirds of those in Britain and 10–15 percent below those in France and Germany (Table 1). Comparisons based on purchasing power parities bring Belgium more into line with its continental neighbours, but still leave its real wages a third beneath Britain's.

Belgium's position in the European league table of real wages does not seem to have improved by the mid-1920's. A contemporary study by Gottschalk compared wages in various cities of the world using a crude purchasing power parity index based primarily on food products. The results (Table 2) show Brussels at the bottom, though the absence of southern European cities should be noted. Gottschalk's cross-section results receives support from the information on real wage trends in several European countries. Scholliers (1989, p. 232) shows that from before the First World War until the late 1930's Belgian real wages in industry grew less than did real wages in Britain, the Netherlands and France.

TABLE 1
Yearly Industrial Wages in Several Countries, c. 1905
(GB = 100)

	Converted at exchange rates	*Converted using purchasing power parities*
Belgium	64	67–70
France	72	64–69
Germany	75	64–70
Italy	44	38–41
Sweden	84	73–81
Great Britain	100	100

Source: Zamagni, 1989, pp. 118–19.

TABLE 2
Real Wages in Several Cities, 1925
(London = 100)

Amsterdam	84	Ottawa	165
Berlin	64	Philadelphia	183
Brussels	55	Stockholm	76
Copenhagen	94	Sydney	140
Oslo	80		

Source: Gottschalk, 1926.

Today Belgium is a relatively high wage economy and it has been so since the 1950's. In 1955 Belgian industry had the third highest average hourly wages in Western European industry. When social security and other changes were taken into account, Belgium came second after France (Bureau International du Travail, 1959, p. 68). These comparisons were made at official exchange rates. Somewhat more precise calculations for 1960, again at official exchanges rates, show average industrial wages in Belgium, not taking into account firms' contributions to social security, to be above Dutch, German and French wages and about 15 percent below British wages. When firms' social security payments are taken into account, Belgian, German and British wages are much the same, with the French and the Dutch trailing behind (*Industrie*, 1960, p. 892).

The 1930's and 1940's thus seem to have been the critical period for the change in Belgium's relative wage level. In the early 1950's Dupriez called attention to an increase in Belgian real wages of some 30 percent from before the war and to the advance made on neighbouring countries (Dupriez, 1951, 1952). His figures for the movements in relative wages and prices (Table 3) show Belgian gains in real wages relative to the Netherlands, France and Germany. Another contemporary study, by Masoin (1951), looked at the changes in nominal wages and nominal labour costs from 1938 to 1950 in Belgium, the Netherlands, Great Britain and Germany. Using official exchange rates, he found that Belgian wages rose almost twice as fast as those in the other countries and that total labour costs rose even faster.

The studies by Masoin and the International Labour Office both indicate the importance of the growth of employers' contributions to social security in the 1940's. The 30 percent increase in real wages discerned by Dupriez almost certainly refers to total labour costs, not to wages received by employees. The best available series for wages and prices (Appendix Table) show a gain of only 13–23 percent between the late 1930's and the early 1950's. The increase in employers' social security contributions could, on a rough calculation, bridge most of this gap.

TABLE 3
Belgian Wages and Prices Relative to Other Countries in 1951
(1938 = 100)

	Nominal wages	*Cost of living*	*Wholesale prices*	*Real wages*
Belgium/Great Britain	230	240	159	96
Belgium/Netherlands	274	198	161	138
Belgium/France	190	123	128	154
Belgium/Germany	256	233	na	110
Belgium/USA	107	126	132	85

Source: Dupriez, 1952, p. 460; real wages = (nominal wages/cost of living) × 100 (our calculations).

Belgium's move up the northern European league table of wages around the time of the Second World War raises a number of questions of fact and interpretation concerning its relationship to productivity change. Did Belgium make similar progress on the productivity league table? Did wages and labour productivity move in parallel, or were their movements unsynchronized? What impact did low and high wages have on the speed and nature of productivity change?

II. TECHNICAL CHANGE AND PRODUCTIVITY

The definitive history of Belgian productivity growth in the twentieth century is still to be written, which makes it hard to give good answers to these questions. The gaps in the statistical record before the Second World War are large, most notably because the Belgian industrial censuses give little information on output. Nevertheless, some indicators of the changes in labour productivity do exist.

Maddison has used the published Belgian material, such as it is, to estimate output and labour input over time. On his reckoning (Table 4) Belgian performance in the aggregate was quite poor. Over the period as a whole it lies second bottom to Britain, whose 'failure' in this respect to notorious. Belgium does better relative to the other countries in the first part of the period, but came last over the 1940's and 1950's. Maddison's calculations give no hint of any significant improvement in Belgium's relative economic position.

Vandermotten (1980) presents estimates for labour productivity in Belgian industry (actually a subset of industries) at dates corresponding to censuses of industrial employment. His results (Table 5) suggest that industrial labour productivity rose only a bit faster than aggregate labour productivity, particularly in the first part of the period. Vandermotten's figures, unlike Maddison's, show little change in the rate of labour productivity growth over the period. This seems to arise from that fact that 1937, the year of the industrial census, was one of the best years in the 1930's. Three-year

TABLE 4
Growth Rates of GDP per Man-Hour in Several European Countries
(% per annum)

	Belgium	*France*	*Germany*	*Netherlands*	*UK*
1913–60	1.8	2.5	2.3	2.0	1.7
1913–38	1.5	2.6	1.8	1.5	1.2
1938–60	2.1	2.4	2.8	2.6	2.2

Source: Maddison, 1982, p. 212.

TABLE 5
Growth Rates of Belgian Labour Productivity
(% per annum)

Source:	*Maddison*	*Vandermotten*		*Cassiers*
Coverage:	*GDP*	*Industry*		*'Basic industries'*
Denominator:	*Man-hours*	*Man-hours*	*Man-years*	*Man-hours*
Period				
1910–61	1.8	2.1	—	—
1910–37	1.5	2.0	1.6	3.2
1937–61	2.1	2.2	—	—
1909/11–1960/62	—	2.2	—	—
1909/11–1936/38	—	1.7	1.8	3.4
1936/38–1960/62	—	2.7	—	—

Sources: Maddison, 1982, p. 212; Vandermotten, 1980, pp. 282, 295; Cassiers, 1989, pp. 65, 227. Note that the three-year averages cover only production and not the labour input.

averages from Vandermotten's industrial production index show a more marked acceleration.

It is not surprising that Maddison and Vandermotten arrive at similar results: both are ultimately based on production indices put together by Carbonelle (1959) in the 1950's. These indices combine series which represent for the most part final output, not value-added and will be biased if the share of value-added in output is changing. Blomme (1988) has shown how this bias matters in agriculture. Unfortunately, it turns out to significantly lower the rate of productivity growth in agriculture.

Another industrial productivity index, again partial and based on output indicators, has been constructed by Cassiers (1989) for the first part of the period. This index covers industries for which annual data exist on production and employment. These are essentially mining, quarrying, and metallurgy (ferrous and nonferrous), industries which still gave employment to almost two-fifths of Belgian industrial workers in 1930. At the cost of more limited coverage, it gives a more detailed picture of change. The index (Table 5 and Appendix Table) shows faster labour productivity growth in 'basic industries', as they were called in the official statistics, than in the rest of Belgian industry. Over the First World War there was, as elsewhere in Europe, an abrupt decline in working hours. Productivity per man-hour had probably recovered its pre-war level as early as 1922. The interwar years were then characterized by two periods of very rapid growth in labour productivity, separated by a sharp decline in 1929–32.

This picture of rapid productivity growth between the wars is supported by other indicators of progress (Cassiers, 1989, pp. 57–62, 228–29). In cotton

spinning (not included in Cassiers index) output per man-hour grew by 2.7 percent per annum from 1910 to 1937, as against only 0.7 percent in the UK; in cotton weaving the comparable figures were 4.1 percent and 0.0 percent. Both the mining of coal and glassmaking underwent almost complete mechanization during the 1920's. Electrification was widespread and rapid, with electric motors being widely adopted in industry.

The movements in labour productivity over the war and in the late 1940's remain somewhat obscure. Vandermotten (1980) shows labour productivity in industry declining by 1.8 percent per annum between 1937 and 1947, but it must be remembered that 1937 was quite a good year and 1947 still a year of recovery. Dupriez (1951), writing in the early 1950's, presented a much more optimistic view. He saw the immediate post-war years as marked by a rapid adaptation of Belgian industry to higher wage costs. Firms adapted, he said, not so much by making major investments in new plants as by introducing labour-saving improvements to their existing production apparatus. This re-equipping was facilitated by strong demand for Belgian products and by the absence of a severe balance of payments constraint on the imports of machinery.

From the late 1940's labour productivity growth in Belgium, while respectable by interwar standards, was slow in international terms. Aggregate labour productivity grew by 2.7 percent per annum from 1948 to 1960, compared to 3.6 percent in the Netherlands and 3.9 percent for the European OECD countries (Van Rijckeghem, 1982, p. 586). Unlike in other countries, labour productivity growth took place against a backdrop of declining industrial employment. Indeed productivity growth was often highest in stagnating or declining industries: in textiles, leather and wood and furniture rates of 6 to 6.5 percent were observed (Defay, 1961).

Structural change made very little contribution to aggregate productivity growth in the 1950's. This was, in part, due to the rationalizations made in declining industries. But Lamfalussy (1961) and others have argued that it was also due to the absence of investment elsewhere in industry:

> It is surprising to find that new industrial technology in the twentieth century has had a much weaker impact on Belgium than on Britain, or on countries like Germany, France, Italy and the Netherlands. True, there has been some development in new fields, but it seems fair to say that, as compared with the neighbouring countries Belgium has improved her efficiency in traditional lines rather than developing new activities with automobiles, aircraft, plastics, pharmaceuticals, petrochemicals, electrical engineering or electronics (Lamfalussy, 1961, p. 15).

This reproach, all too familiar to those working on the British economy in the first half of the twentieth century, was already being made in Belgium in the 1930's.

This brief survey of Belgian labour productivity history shows that while productivity growth in the aggregate seems to have been slow by international standards, partial indicators suggest another picture. Between the wars several industries showed major gains in efficiency. Just after the Second World War rationalization brought quick and important increases in output per unit of labour. The contrast between the aggregate indices and the partial indicators may, of course, arise from differences in behaviour across industries.

III. DIFFERENCES IN BEHAVIOUR BETWEEN THE INTERNATIONAL AND DOMESTIC INDUSTRIAL SECTORS

Most of the information that we have on Belgian productivity growth pertains to industries heavily involved in international trade. Cassiers' annual index, for example, is composed exclusively of such industries. If we accept the dreary picture of overall productivity growth drawn by Maddison and Vandermotten, then by implication labour productivity growth in industries catering for the domestic market must have been very low indeed. Unfortunately, direct quantitative evidence on this point is quite scarce. One nugget is Buyst's (1989, p. 248) estimate that labour productivity in construction grew at only 0.7 percent per annum in the interwar years.

It is perhaps not surprising that firms heavily involved in international trade would show more significant productivity gains. They were directly in competition with firms in other countries and their survival depended on keeping up with new techniques and products wherever they were being developed. Firms producing only for the domestic market did not face the same external discipline nor have the same contacts with change elsewhere.

What is unusual about Belgium is that it was — and still is — the European economy most open to trade. In many industries exports have accounted for well over half of production, and the international sector was critically important in the determination of wage and price levels and as a source of economic fluctuations.

Cassiers (1989), in a more extended study, has shown that during the interwar period the characteristics and behaviour of the industries dependent on international trade differed in important ways from those of industries producing largely for the domestic market.[1] Firms in the international sector were larger: in 1930 83 percent of the workers in the international sector worked in enterprises with at least 50 employees, while only 37 percent of

[1] The justification and methods for dividing industrial activity between the wars into these two sectors are discussed in detail elsewhere (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.

those in the domestic sector did. They were more mechanized. They were more unionized and subject to more frequent wage demands. In the domestic sector, by contrast, small family firms, with little or no union presence, were the norm.

With these differences in mind, we can turn to the chronology of productivity and wage movements. After the First World War general economic conditions favoured the growth of the international sector. Demand was strong for Belgium's traditional metal products. With wages still low, firms made high profits, which, in turn, helped to finance the rapid introduction of new techniques during the 1920's. These very favourable conditions lasted only until 1926 or 1927, when domestic prices began to rise more rapidly than export prices. Wages also started to catch up with labour productivity in the late 1920's.

The way in which wages were determined in the international sector was slowly being changed under persistent pressure from the unions. The losses incurred by workers during the price rises of the war and the immediate postwar years led to the indexation of wages to price changes and the development of an official cost of living index to measure them. Note that this indexation was almost entirely confined to the international sector. Wage fluctuations in the domestic sector were determined not by price changes, but by the tightness of the labour market, as indicated by the degree of unemployment. These differences in behaviour suggest that, at least for the interwar years, it may be reasonable to conceive of the Belgian labour market as segmented.

Indexation of wages to the cost of living helped to stabilize real wages, but did not guarantee that they would grow. As in most countries, the growth of real wages in the 1920's was modest compared to the gains made in labour productivity. Some authors, notably those associated with the régulation school (Boyer, 1978), have seen the origins of the great depression in the expansion of productive capacity in advance of real wages and mass consumption demand.

In Belgium the crisis of the 1930's was felt first and hardest by the international sector. The need for exporters to bring their prices in line with world prices led to strong downward pressures on profits and wages. The fall in labour productivity in the early 1930's probably reflects the prevalence of short-time working in the first years of depression. When conditions failed to improve rationalization was undertaken, often under pressure from the banks and holding companies. With the exception of nonferrous metals, the production of which increased significantly in the 1930's, most labour productivity gains in the international sector came against a backdrop of falling output.

But the depression and the protectionism it spurred brought out the idea of developing a domestic market for industry. Various social policies worked in this direction. Indexation of wages was gradually generalized to the domestic sector and real wage increases became more noticeable in the late 1930's.

Institutions were set up at sectoral and national levels where employees, employers and government could meet to discuss the general levels of wages, prices and social benefits. These had only limited effect before the Second World War, but played an active role in its immediate aftermath. The *Projet d'accord de solidarité sociale* of 1944 foresaw, among other things, the movement in parallel of wage-earners' purchasing power and the adoption of new techniques of production and exchange. This link between productivity and wages was explicitly recognized in postwar wage negotiations, culminating in the *Déclaration commune sur la productivité* of 1954. Here the unions agreed to cooperate fully in the introduction of new techniques of production. In return employers promised that the returns would be shared equitably between capital and labour.

The year 1944 saw two other developments with implications for wages in the intermediate postwar years. First, much in the spirit of Beveridge, a general system of social security was introduced, with significantly increased employer contributions. Second, the first *Conférence nationale du travail* since before the war was held to fix the level of postwar wages. Subsequent *conférences nationales* set national norms for wages, which were then taken up at the industrial level by committees of employers and unions.

The *conférence nationale* fixed wages in 1944 as a percentage of those in 1940. In the early 1950's it was accepted that they had been set about 20 percent too high through reference to a cyclically inappropriate base year (Dupriez, 1951, pp. 18–20). Dupriez makes the interesting suggestion that this miscalculation had the beneficial result of making firms adapt quickly to higher labour costs. This 'wage shock', along with the generalization and elaboration of the social security system, helped make for the rapid transition Belgium underwent from a low wage to a high wage economy.

As noted above, we do not yet have sufficient information on productivity change during the 1940's to resolve the problem of how Belgium managed to sustain its high wage status. Dupriez, perhaps the best informed contemporary observer of the postwar economy, cites several factors that made high relative wages sustainable in the short-run. On the one hand, demand for Belgian products was high, as it had been during reconstruction after the First World War. On the other hand, its competitors were plagued by a variety of problems: Britain with an unfavourable exchange position, France with inflation. Germany with the destruction of the war. However, as the world economy recovered, these conditions favourable to Belgium should have disappeared, yet Belgian wages remained high.

Dupriez notes more persistent changes. He refers to a better educated work force, an interesting argument but one for which he offers no evidence and on which little subsequent research has been done. He also, as noted above, says that technical progress at the margin — adaptations to existing production equipment — was significant. This, he argued, required a low investment ratio, but produced swift and important results in the short-term.

On the other hand, it is possible that the favourable economic conditions

of the immediate postwar years simply allowed labour to capture some of the gains in productivity made in the interwar years, that it was a catching-up process. But even here there is an hint of overshooting in the low profit level and investment ratio of the 1950's, attributed in part to high wage costs by Van Rijckeghem (1982, pp. 585–90).

IV. CONCLUSIONS

A review of the readily available evidence on the changes in wages and labour productivity in Belgium during the first part of the twentieth century poses some interesting problems. One is that over the long-term, from the 1910's to the 1950's, wages in Belgium rose relative to those in neighbouring countries, but Belgian labour productivity growth seems to have rivalled Britain for last place in the European league table. Both the weaknesses of the existing estimates and the rapid growth shown by some partial indicators suggest that productivity growth may have been underestimated. A second problem arises from the patterns of wage and labour productivity growth within the period. In the interwar years labour productivity seems to have grown strongly, at least in the international sector of the economy, while real wage growth was very limited.

Belgium gains in terms of relative wages seem to have taken place over the decade of the 1940's. It has been suggested that changes in the demand for labour and in the institutions of the labour market after the war may have permitted workers to catch-up with the gains in productivity that had been made between the wars.

Our preliminary investigation of how Belgium was transformed from a low wage to a high wage economy reveals, more than anything else, the need for more research on the country's productivity history. Cassiers' annual index for labour productivity in the basic industries should be extended into the 1940's and the 1950's, to help give a clearer view of change over the Second World War. Work on productivity change in industries catering primarily for the domestic market is necessary to test our supposition that they performed poorly in the interwar period.

The interpretation of Belgium's pattern of productivity growth also needs more work. We know too little about the role of factor inputs for want of reliable capital stock estimates before the 1950's and of research on changes in the quality of the labour input. We have suggested a role for social policy in the relationship between wages and productivity in the late 1930's and 1940's, but this needs further investigation at the micro-economic level. Finally, there remains the problem of why the Belgian economy failed, first in the interwar period, then again in late 1940's and 1950's, to move either toward 'new' industries or toward the production of finished, rather than semi-finished, manufactures in its 'old' industries.

The study of productivity growth in Belgium during the twentieth century is certainly underdeveloped relative to that in Britain and in most neighbouring countries. Much of the basic statistical groundwork remains to be done. But the peculiarities of the Belgian case — the country's precocious industrialization, its great openness to trade, its wage movements, its problems with structural change — make it a missing element of some importance in the comparative study of productivity growth.

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APPENDIX TABLE 1
Belgian Wages and Productivity, 1910–60
(1929 = 100)

	Nominal wages	*Retail prices*	*Cost of living*	*Real wages I*	*Real wages II*	*Labour per year*	*Productivity per hour*
1910						71	56
						73	
						77	
	8	11	na	70	na	77	
1920	40	52	na	76	na	55	
	43	45	46	95	92	48	48
	41	41	43	99	96	60	
	48	48	50	99	96	68	
	55	55	57	100	97	73	
1925	55	59	61	107	91	70	
	63	70	75	91	84	83	
	77	90	93	85	83	85	
	86	93	96	92	89	93	
	100	100	100	100	100	100	100
1930	108	100	104	107	104	93	
	101	90	93	112	109	89	
	92	83	86	111	108	85	
	90	79	82	111	108	93	
	86	76	79	112	109	108	
1935	82	76	79	107	104	116	
	89	79	86	112	104	117	
	99	83	93	119	107	128	131
	104	86	93	120	113	101	
	105	86	93	122	113	109	

APPENDIX TABLE 1 — *contd*

	Nominal wages	*Retail prices*	*Cost of living*	*Real wages I*	*Real wages II*	*Labour per year*	*Productivity per hour*
1947	339	283	275	119	121		
	371	324	336	114	111		
	390	314	325	123	120		
1950	406	314	321	128	126		
	450	341	353	131	128		
	470	345	357	135	132		
	469	345	357	135	132		
	482	348		136			
1955	496	348		142			
	538	359		149			
	588	369		158			
	613	372		164			
	626	379		165			
1960	650	379		170			

Notes/Sources: Nominal Wages: Gross hourly wages (not including employers social security contributions); Retail Prices: Official index; Cost of Living: index compiled by the Institut de Recherches Economiques de Louvain; Real Wages I: Nominal wages deflated by retail prices; Real Wages II: Nominal wages deflated by the cost of living index. Nominal wages and retail prices: Cassiers, 1980. Cost of Living Index: *Bulletin de l'Institue de Recherches Economiques de Louvain*. Labour Productivity in Belgian Basic Industries: Cassiers, 1989, pp. 65, 227.

(*continued from inside front cover*)

5. Statistical tables should be clearly headed and be as self-explanatory as possible. Units of measurement, base-dates for index numbers, geographical area covered and sources should be clearly stated. Whenever they feel that the referee would have difficulty in testing the derivation of their statistics, contributors should provide supplementary notes on the methods used, which will not be published.

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