A COMPARATIVE PRODUCTIVITY SURVEY OF SOME WESTERN EUROPEAN COUNTRIES WITH SPECIAL EMPHASIS ON BRITAIN

H. A. Suleiman, M.A., Ph.D. *

This is a study in the field of international productivity comparisons. It attempts to explain some of the factors responsible for productivity differences between some of the Western European countries. It is by no means an extensive one and most of the information relates to the 1950's and early sixties ; it was a by-product of an unpublished study on the factors affecting British industrial productivity during this period. Emphasis has been placed on British industrial development in comparison with other developed countries, in particular France and Germany. However, because of space limitations no details are given here.

The literature on comparative productivity at the international level is still limited. Very few comparative surveys have been undertaken with a view to measuring the differences in the overall productivity of labour between industrial countries [1]. Great differences exist in industrial structure and in the composition of production costs to which may be added difficulties in terminology and statistical evidence, rendering direct measurement on a truly comparative basis an extremely difficult task. With the exception of a few special studies, such as those

(*) Lecturer Department of Economics, Faculty of Economics and Commerce. University of Libya.

(1) Cf. **'Europe's Needs and Resources : Trends and Prospects in Eighteen Countries'**, J. Frederic Dewhurst, J. O. Coppock, P. Lamartine Yates and Associates. (Edited), Twentieth Century Fund, New York, 1961, esp. pp. 762-6.

of L. Rostas [2] and some few others, it may be said that much more needs to be done as regards methodology and empirical analysis in this field. In the absence of direct effective means of measuring productivity, the indirect measures can be taken as approximate indices of productivity levels. However, even if we agree on problems of definition and measurement, we still, in the indirect measurements, have to avoid the innumerable pitfalls of international comparisons proper. Problems related to the index-number construction, weighting and the choice of the base year are some of the many examples that may render such comparative studies less accurate.

Fortunately, available statistics in industrial countries concerned in this survey have been redefined, in recent years, in such a way as to permit meaningful comparisons. Moreover, in recent years, comparative studies at the international level have been introduced and have contributed greatly to this field (the conclusions drawn from these studies depend greatly on the method adopted in dealing with the figures and on the assumptions used).

It has been the trend in some of the post-war comparative productivity studies to choose the year 1950 as a base [3]. The choice of an earlier year is avoided, as being too close to the end of the war ; this will underestimate the performance of some countries (especially of Britain) and over-estimate those of other industrial countries which have been lagging behind Britain in the early post-war years (Germany is the obvious case in this respect). The choice of this year as a base has also been criticised on two grounds. First, 1950 may be regarded as falling too close to the end of the war. Second, income per head in the United Kingdom seems to have been higher, even well before the war, than most continental countries ; this may have involved a 'natural' tendency for the United Kingdom to grow more slowly than

(2) L. Rostas, **'Comparative Productivity in British and American Industry'**, NIESR, Occasional Papers XIII, Cambridge, 1948.

(3) For further detail on the choice of this year as a base see A. Lamfalussy **'The United Kingdom and the Six'**, London, 1963, pp. 12-26.

the low income countries. Britain was able by the end of 1950 to exceed the pre-war level performances in every respect ; while other European countries were unable to do so until the end of the first half of 1950's. This was mainly due to the fact that the latter countries suffered more than Britain from the impact of the war. Moreover, Britain reached a structural maturity in the labour and sectoral distribution of the economy early in the 1950's ; while other countries have had more potential in the structural distribution of their economies [4]. Thus Britain's rate of growth during the 1950's will definitely be underestimated relatively to other industrial countries as a result of the choice of the year 1950 as a base. To avoid these criticisms, the year 1953 will be more useful than 1950 as a base in the comparative study between the United Kingdom and other industrial countries, Germany and France in particular.

The analysis in the following pages is divided into three sections. First, we start off by briefly describing the main characteristics of industrial growth in other countries and show how productivity in these countries compared with that of the United Kingdom during the period before 1950. In the second section, we shall present the record of industrial productivity development during the period between 1950 and 1961 and show how the record in other industrial countries compares with the record achieved in the United Kingdom. In the third, and final section, we shall deal with the analysis of the factors responsible for the productivity differences between the industrial countries concerned in this study.

A. The period before 1950

1. *Comparative Productivity Growth*

One of the most striking facts of Western European economic history during the post-war period has been, as will be shown in the

(4) See Tables 2 and 3.

following section, the widening gap between the industrial and economic performance of the United Kingdom and that of other continental countries (especially those of Germany and France). The British performance also compares less favourably with that of the United States, though the widening of the gap has been less than that observed in the gap between Britain and other continental countries. In fact, the poor British industrial performance dates back to the beginning of this century and in some studies this date goes further back in the past to the years in the eighteen seventies.

If we look at the figures of industrial production presented in Professor Arthur Lewis's Economic Survey [5], one observes a higher and continuous increase in industrial production of Germany and the United States during most of the years before the last war. Between the periods, 1861-65 and 1930-37, industrial production in Britain increased by about 190%, while in Germany the total increase was about 400%, and in the United States the increase amounted to about 10 times as much as the level in 1866-74. Although these differences may be attributed mainly to the fact that the levels of industrial production in Germany and the United States were very low compared with that of the United Kingdom at the beginning of the period of comparison and also to the choice of 1913 as a base ; the fact still remains that in other countries, export and productivity performances are more favourable than the United Kingdom's performance during this period [6].

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(5) See tables in the Appendix to the above survey ; figures for the United States are for manufacturing industry only.

(6) A number of studies have been introduced in this field. See in particular, J. H. Dunning and C.J. Thomas, 'British Industry : Change and **Development in the Twentieth Century'**, London, 1961, pp. 14-15. Also K. S. Lomax, "Production and productivity Movements in the United Kingdom since 1900", **Journal of Royal Statistical Society,** Ser. A, Vol. 122, 1959, pp. 192-3 ; W. W. Rostow, 'British **Economy of the 19th Century'.** Oxford, 1952, p. 8 ; W. G. Hoffman 'British Industry, 1700-1960', Oxford 1955 : E. A. G. Robinson, "The Changing Structure of British Economy", **Economic Journal,** sept. 1954, pp. 441-61 ; L. Rostas, "Changes in the **Productivity of British Industry, 1945-50", Economic Journal,** 1952.

The work of L. Rostas which relates to indices of the physical volume of annual production per capita, which constitute direct statistics of productivity, confirms the above statement. These indices, cited here only to draw a comparison between Great Britain, Germany and the United States were as follows in 1936-7. [7].

Great Britain :	100
Germany :	107
U.S.A. :	238

Also Marvin Frankel carried out a similar survey, between the United States and Great Britain, with the help of 1947 and 1948 industrial Censuses in these countries respectively. The result obtained indicates that the U.S.'s average in relation to Britain (244 with Britain as 100) was very close to that found by Rostas [8].

Thus, it is not true to argue that it was only during the post-war period that Britain's productive performance has been lagging behind other industrial countries. Britain was first in the industrial revolution, and was the leading country in the industrial field. But, when other countries began to industrialise in the late eighteen seventies, and with the help of continued technological developments (which suited new industrialising countries better than Britain), signs of the ending of Britain's industrial supremacy began to appear. This trend continued during the inter-war period and during the years from 1950 to 1961 [9]

(7) It must be noted that there are great variations between one branch of industry and another. The figures presented above represent the average of only those industries considered by the author. If he had omitted from his average a sector in which the differences were great, his differences in weighted averages would have been lower. It is, moreover, a point worth noting that some industries can be found in which productivity is high in Britain, than in the U.S.A.

(8) **'British and American Manufacturing Productivity'**, University of Illinois, 1957.

(9) For analysis on the period 1950-61, see Section B.

2. *The Main Factors Responsible for the Comparative Productivity Differences.*

Many explanations for the productivity differences that had existed between Britain and other industrial countries during the period before 1950 have been made ; but, in fact, are not strongly documented. This is due mainly to the lack of detailed and comparable statistical data necessary for such studies. However, studies that seem more convincing attribute the differences in productivity performances, between Britain and other industrial countries, to three main groups of factors.

1. Other industrial countries started their industrial revolution after Britain. This gave them advantages of adopting more up-to-date machinery (i.e. the use of latest and more productive equipment). Britain lost some ground in this respect, i.e. her productive efficiency may have been less, as she had continued using some older techniques. In other words, although Britain's industrial structure had been changing, it was not to an extent that offset the advantages enjoyed by new industrialising countries.

2. The growth of population and labour force has, in general, been faster in other countries than the rates of growth in Great Britain. The impact of this factor on industrial development works in two directions. On the one hand, population growth increases the demand for industrial products, and hence provides industry with one of the factors necessary for their expansion. On the other hand, labour growth provides industry with one of the factors of production necessary for industrial expansion.

It must be noted that during the period before the last war, labour supply was not the direct factor responsible for the productivity differences between Britain and other industrial countries. For extra labour was available for further industrial expansion in Great Britain, as the high level of unemployment that existed during the inter-war period indicated. But the argument that attributes difference of produc-

tivity to labour and population states that this factor worked more effectively in other industrial countries than it did in Britain. Britain, being mainly dependent on international trade in her industrial expansion did not benefit much from the small increases in her population. And not being able to maintain and expand her export markets (either because other industrial countries started producing what they used to import from Britain, or, because other industrial countries — like Germany, United States and Japan — were competing with Britain in the world trade) labour increases did not contribute greatly to industrial expansion.

3. Finally, factors related to the size of industrial firms, quality of management, size of the market and many other factors related to the general economic policy, availability of resources, etc., have all been referred to as being responsible for some of the differences that existed in the performance of various industrial countries during the period before the last war.

B. Comparative Productivity During the Period 1950–61

This comparative productivity study will consider Britain and the European Economic Community (E.E.C.) countries, with special reference to Germany and France. The United States is excluded because a comparison of Britain with this country would help us a little. On the one hand, the superiority of the United States' productivity performance over Britain and Continental countries, has been taken for granted and probably derives in no small part from the superior wealth of that country[10]. This greater wealth can be explained by a variety of historical factors and, particularly in the present century, by the less unfavourable effects on the American economy of the two world wars. Perhaps the main drawback, however, in making

(10) Cf. M. Frankel, op. cit., S. Melman, **'Dynamic factors in industrial productivity,'** 1956 ; Moses Abramorvitz, **'Resource and output trends in the United States since 1870'**, Occasional papers 52, NBER ; E. Rothbarth, **'Causes of the superior efficiency. of U.S.A.** industry as compared with British industry. E.J. 1946.

comparisons with the United States is that the reasons for U.S. superiority appear to be so much the result of history, and therefore inevitable, that practical remedies for British inferiority are not easily envisaged. For example the different social values in the United States, which have contributed so much to the country's economic progress, are primarily the result of abundant land and resources and of a hundred years of free immigration from every part of the world. On the other hand, if the more immediately relevant facts of the post-war growth of the American economy in general and industry in particular are considered, the example of the United States appears to be not so significant as that of other industrial countries. In the 1950's industrial growth and output per head in the United States grew no faster than that in the United Kingdom [11]. It is much more important to understand why industrial productivity in the United Kingdom grew much more slowly than it did in the EEC countries as a whole, and in West Germany and France in particular.

Thus, to look at the experience of the United States as the best example, in the past at least, and to attempt to tackle internal problems by same American experience is, in fact, a trend greatly in the misleading direction and unfavourable conclusions may be arrived at. On these grounds the Anglo-American productivity teams may be criticised. For, a misleading impression can easily be given by the reports on productivity which, naturally enough, bring back a description of the best rather than submit a balanced appraisal.

We are not suggesting that comparative productivity with the United States is not significant. There are many fields in which Britain could gain much from the use of American practice, especially in the field of management techniques. The existence of dynamic and creative management and the use of most up-to-date technologies in American industry can be of real assistance to British industry if they can be

(11) See P. E. P., Report, **'Growth in the British Economy'** London, 1960. **Table 4**, p. 31.

adopted, with some modifications, to suit the British industrial climate [12].

From the above discussion it may be stated that the really significant lessons for economic policy in Britain come not from the United Sates, but from countries in Western Europe whose economic problems are much nearer to Britain's. We suggest, therefore, the selection of a line of approach which narrows down the scope for our international productivity study. We shall begin this comparative survey by showing some of the similarities that exist between Britain, France and Germany. Then we shall present a short review of the industrial economic history of the 1950's, paying particular attention to those periods and countries which were marked by a clear slack in industrial growth. In other words, we shall present a contrast study of industrial development between the countries compared. This historical approach will yield us some guidance as to what factors or problems can be neglected and what factors will have to be looked at, as being responsible for the differences in the productivity performance.

1. Britain as compared with Germany and France

Tables 2 and 3 below indicate some of the similarities and differences that exist between Britain, France and Germany. They show the shares of the main sectors of the economy in the value of total output and labour force. The similarities are more distinct between Britain and Germany than between Britain and France. While the West German economy is similar to the British in area, population and industrial structure, the French economy is in many respects very different. The land of France is almost twice that of Britain or West Germany, and in 1954 27% of the occupied population worked on the land, against 4.5% of the labour force in the United Kingdom.

The chief difference among the three countries is that Germany,

(12) Cf. J. H. Dunning, 'American Investment in British Manufacturing Industries,' London, 1957. Also, Graham Hutton 'We Too Can Prosper'. G. Britain, 1953.

and to a greater extent France, still had a larger agriculture in relation to the size of industry (whether measured by per cent distribution of output or by the structural distribution of labour force) than the United Kingdom.

2. Industrial Growth, Employment and Productivity per man-hour

The most striking feature of industrial development in France and Germany is that both countries enjoyed, in the 1950's and early sixties, a more rapid and continuous growth of production and productivity than the United Kingdom. Yet, they did so for very different reasons. In Germany the success has been achieved through following a liberal policy with its main features of providing incentives to work and production. The philosophy of the "social market economy" has been at the centre of the German economic achievement, playing the major part in the expansion of production and in the maintenance of price stability. The emphasis has been placed on production first, and only afterwards on consumption [13]. While in France the trend (since the war) towards planning, which was initiated to answer certain definite needs specified in the plan, has been the dynamic factor in France's industrial achievements [14]. As to Britain, the slow rates of growth of industrial production and productivity have been attributed mainly to the stop-go-stop policy pursued by the government during some of the post-war years [15].

(a) *Industrial Production*

Between 1950 and 1961 the United Kingdom's industrial produc-

(13) Cf. F. Lutz, "Germany's Economic Resurgence", **Lloyds Bank Review,** Jan. 1956, pp. 12-27, esp. pp. 17-9.

(14) **'French Economic Planning : Official Papers'**, PUBLISHED by the French Embassy in London.

(15) For a detailed study on this aspect see H. A. Suleiman, 'A survey of the Factors Affecting British Industrial Productivity : 1948-61', unpublished M. A. Thesis, Sheffield University, 1964, Section D, Chapter IV.

tion has increased by less than 40%, while during the same period, the combined industrial production of the EEC countries has more than doubled ; the British cumulative annual rate of growth has been somewhat less than half of that of the community countries [16].

The contrast is more distinct when Britain's performance is compared with that of Germany and France. As shown in Table 4, industrial production in Germany increased by 164% and in France the increase amounted to 97% ; with cumulative rates of growth of 9.2 and 6.4 per cent per annum respectively. In Britain the annual rate of growth, over the same period, was only 3%. The lag in the British performance occurred mainly during three periods : 1950-52, in 1955-57 and in 1961.

(b) *Industrial employment*

West Germany enjoyed a great influx of labour, most of it young, trained and able-bodied and without ties to any particular region of the country. This influx of labour clearly prevented such strong pressures towards inflation as were experienced in Britain after the war. France, on the other hand, achieved rapid increases in production without such an increase in the labour force. But she enjoyed changes in the structure of the economy and particularly a potential labour supply in agriculture, which can be a substitute for an increase in the working population in providing more labour for industry. Britain with a more mature economy, and agriculture already employing only about 4% of the total occupied population, cannot easily compensate for an almost stationary working population by such large transfers of workers into the expanding industries.

Figures of industrial employment presented in Table 4 indicate that while employment in Germany increased by about 70% between 1950 and 1961, and by 11% in Britain, in France the total increase was only 7% over the same period. The annual rate of employment

(16) A. Lamfabussy, op. cit., p. 3.

increases were : 5.1% and 0.7% in Germany and France respectively. In Britain the rate of increase was 1.1% between 1950-61. Annual rates of production, employment and figures of total number of hours worked in the three countries are shown in Table 1.

(c) *Industrial Productivity*

Productivity, output per man-hour, followed, in general, production trends in the three countries. Britain with the lowest rate of annual production growth has also been one with the lowest rate of productivity growth. The highest rate of productivity growth has been secured by France (5.1%) followed by Germany, with an annual rate of 4.3% [17]. Yearly movements of industrial productivity also indicate a similar picture to the one observed in the rates of growth. In Britain years of industrial decline were also years in which productivity remained relatively stagnant. In France, and to a lesser extent, Germany, relatively high and continuous yearly increases were secured.

TABLE 1

Growth of industrial production, employment and productivity in industry between 1950 and 1961 per cent per annum

	Production	Employment	Total number of hours worked	Productivity
United Kingdom	3.0	1.1	1.5	1.6
West Germany	9.2	5.1	4.7	4.3
France	6.4	0.7	1.1	5.1

Source : Table 4 below.

Notes : Total number of hours worked has been obtained by adjusting employment to changes in number of hours worked per man. The yearly averages are compound rates.

(17) Highest rates of output growth secured in Germany were not associated with highest productivity growth. France as shown above had secured the highest rate of productivity growth even though her production was less than that of Germany. This aspect will be explained in the following pages.

As a result of these movements in productivity, associated with continuous increases in the earnings of labour, during most years, wages cost per unit of output in the U.K. increased at rates higher than those experienced in other industrial countries. These figures provide us with one of the explanations of the slow rates of exports of the U.K. and of the relatively better performance of France and Germany. This is clearly indicated in Table 5 below.

C. Factors in the International Productivity Differences

Many authors, economists and engineers have studied the factors governing the total productivity of labour [18]. It is not intended to deal with each of the many factors that have been analysed in these studies. The aim here is to give a broad outline of the subject, by emphasising the predominant factors whose development sets in motion secondary factors, which in turn have a decisive influence at the level of the firm, but which are themselves determined by the primary factors at national and community level.

The factors responsible for productivity differences at the international level or the relatively poor performance of British industry, may best be discussed in terms of labour supply, growth of investment and growth of exports. The first factor, labour supply, affects capacity utilization and this may have been growing more slowly in the United Kingdom than in other countries. The two other factors are on the demand side. On the one hand, the low rate of exports growth in the U.K. (relatively to other countries) may have been responsible for the poor performance of British industry, by not being able to play a dynamic part in initiating and sustaining industrial growth. Moreover, the consequences of the restrictive economic policies pursued, in the

(18) Some of these factors and studies have been cited in T. E. Easterfield 'Productivity Measurement in Great Britain', A Survey of Recent Work, Department of Scientific and Industrial Research, London, 1959. Also J. H. Dunning, 'American Investment in British Manufacturing Industries' 1958, p. 148.

United Kingdom, as a result of this poor performance in the international market may have resulted in the existence of other secondary factors that aggravated the industrial position, relatively to other countries. On the other hand, the impact of investment on productivity differences may throw much light on the aspect of British poor performance in the industrial field, relatively to Germany and France, during the period 1950-61.

1. *Labour Supply and Industrial Growth*

There has been a tendency in the post-war period for the rate of increase of total output to be relatively high in countries where the labour force was growing relatively fast ; and, as the German experience indicates, an ample labour supply has been associated both with *more* moderate wage increases and inflationary pressures and with *more* favourable balance of payments conditions than was experienced in countries with tight labour markets, such as in Britain and France.

In fact, the slow increases of industrial output and productivity of the United Kingdom (relatively to Germany and France) cannot be explained in differences in the growth of labour supply. For, while the average cumulative rate of growth of industrial employment has grown in Britain at an annual rate of 1.1% between 1950-61 it has been substantially higher than that prevailing in some of the faster growing countries like France in which the rate of growth of industrial employment has grown at a rate of only 0.7%, during the same period.

But it is possible to argue that the unfavourable position of the United Kingdom as regards the potential supply of labour for industry may have had some influence on the "quality" of labour force employed in industry. The tight labour market in Britain, that resulted in a general shortage of labour, and the phenomenon of labour hoarding, that existed during most of the post-war years, restricted labour mobility. Hence, the best utilization of labour may not have been

achieved [19]. Statistics tell us only about the net changes in the volume of employment ; but identical net changes are compatible with differences in turnover. Although French industry increased net employment less rapidly than Britain, it is possible that the greater potential supply of labour in France has enabled French industry to improve (relatively to Britain) age structure or the professional training of its total labour force [20]. As regards the potential labour supply it may also be added that Britain may have been at some disadvantage from the point of view of the structural distribution of labour force. France and Germany can draw some labour from agriculture, through the introduction of more mechanisation or better organisation, while Britain has reached a stage of much greater structural maturity in the economy and the distribution of labour force since the early fifties, and has, therefore, not been able to obtain a significant increase in the industrial labour force by transfer from agriculture.

However, although the annual rate of employment increase grew almost twice as fast in Britain as in France, productivity in the first country turns out to be the lowest among the three countries. These differences in productivity, especially between France and the U.K may be explained in differences in capacity utilization (or productivity of labour itself). In other words, the limited supply of labour in France, and the continuous increases of labour in Germany were utilized in a more productive way than was experienced in Britain. Moreover, in the latter country the productive capacity of labour has been greatly restricted (not efficiently utilized) by the existence of the phenomenon of labour shortage, which was, in turn, the result of other factors. For example, more investment in relation to labour will, in general, increase labour productivity [21], but as a result of the under utilization of

(19) We are referring here to the concept of 'productive capacity of labour' which is the combined result of labour supply and of average labour productivity. For further detail on this aspect see H. A. Suleiman, **op. cit.**, Section A, Chapter IV.

(20) Cf. The O.E.C.D. **'Economic Surveys : The United Kingdom'** March 1962, Paris, esp. p. 15.

(21) This, it must be noted, can be interpreted in the sense of actual increases in labour supply.

productive capacities, i.e. inefficient utilization of existing machinery and equipment, and owing to the slowing down of industrial growth in some years, labour productivity did not increase at high rates, compared with other countries. Hence, it can be argued that labour has been more efficiently utilized in other countries, especially in the case of France.

However the inadequate rise in the labour supply cannot be considered as having been the predominant factor responsible for the steady shortage of labour which may have prevented British industry from growing more rapidly; nor would it be right to say that continental countries have derived a general and systematic advantage over Britain from a more flexible supply of labour (in the sense of net increases). The common feature of the growth pattern in France and Germany relatively to Britain, does not lie in any faster rise of employment ; it lies in a generally more rapid advance of output per man.

2. *The Impact of Investment on the Growth of Industrial Output and Labour Productivity*

The analysis of the impact of investment on output and productivity development will be made by adopting the following procedure. First, we shall relate investment to output growth, i.e. measure the "capital-output" ratio. Second, we shall investigate whether investment has been oriented either towards extending capacity or towards increasing the productivity of labour, i.e. measure the "investment-productivity" ratio. In other words, we shall compare the efficiency of investment in terms of *increments to output* and *increases in output per man-hour.*

Before we begin this analysis two points must be made clear. First, there are no figures for investment in industry for France. We shall, instead, use figures of investment ratio of the whole economy. Second, figures of industrial output and productivity used in the following analysis are those presented in table 7. As to figures of

industrial investment in Germany and U.K. we shall use the figures calculated by A. Lamfalussy [22]. These figures of investment ratios are for the period between 1953-60. The gross marginal "capital-output" and the gross "investment productivity" ratios have been obtained by dividing the appropriate investment ratio by the rate of growth of output and of labour productivity respectively.

Both ratios of " capital-output " and " investment-productivity " of British industry were higher than the corresponding German ones. This means that German investment has been more efficient in raising output and productivity than in Britain. There is, however, a relative improvement in the ability of British industrial investment to raise the productivity of labour (relative to output) than in the case of Germany. In other words, German investment has been more efficient in raising output (i.e. expanding capacities) than in increasing productivity of labour. This is reflected in the figures which indicate that the difference between the first ratio was greater than the difference between the second ratio in the two countries. That is, Britain's "capital-output" ratio was more than twice that of Germany, but "investment-productivity" ratio was less than twice the German one.

The "capital-output" and "investment-productivity" ratios in Germany and Britain were 1.8, 3.9 for the first, and 3.7, 6.9 for the second ratio respectively. These figures indicate very clearly the trend that although German investment has contributed more to *output* and *productivity* relatively to Britain, the efficiency in the *first* direction has been more than in the *latter* [23].

In France, for which figures of industrial investment are not available [24], production increased at an annual rate of 6.4%, and since

(22) **'The United Kingdom and the Six'** London, 1963, Table 17.

(23) For details on the Calculations see Table 7 and the source.

(24) Available figures of investment are only for the whole economy, in this investment constituted about 17.% during the period 1953 and 1959, while in the United Kingdom the ratio was 15.0 during the same period.

employment remained relatively stagnant, productivity increased at a high rate of 5.1% between 1950-61. Thus, most of the increases in production were due to increases in labour productivity, i.e. to factors other than labour.

Since France grew more slowly, in terms of industrial output, than in Germany but more than in Britain ; and as productivity per man-hour grew much faster in France (relatively to output) than in Germany (and, of course, the United Kingdom too) it can be argued that "investment-productivity" ratio may have been much lower i.e. better, in France than in Britain and even in Germany. Thus, France has concentrated her capital expenditure on saving labour, rather than on increasing capacity : a policy which seems quite rational when one bears in mind the near stagnation in French industrial labour force. As a result, French investment appears to be relatively efficient in capital deepening, and relatively inefficient in capital widening.

Now we come to the question of the factors behind the differences in the efficiencies (or productivity) of investment in the three countries under comparison. More specifically, why German and French investment have been more efficient than British investment in raising industrial labour productivity and output. In fact, it is not an easy task to give a full account of the reasons responsible for these differences between Britain, on the one hand, and France and Germany on the other hand. The answer becomes more difficult, as French and German experiences are not on similar lines [25]. On the one hand, if we compare the German industrial trend with that of the United Kingdom, we find that the first country was able to secure great increases in industrial employment while in the latter country the increases were not important. On the other hand, when French experience is compared with the United Kingdom, the similarities, concerning the shortage of labour, are very great. Thus to attribute

(25) This raises the problem that we cannot draw conclusions applicable to both countries when compared with the U.K.

German superiority over Britain to increased labour, which resulted in the expansion of capacities and hence the latter contributed to both labour productivity and output, is, in fact, refuted by the French experience, in which the trend of investment deepening was similar to the one experienced in Britain.

However, in the first place, it can be argued that the casual relationship between investment and output may have been responsible for the differences in the productivity performances between France and Germany, on the one hand, and Britain, on the other hand. This proves to be true when industrial investment, output and labour productivity are compared [26]. Higher investment (in the sense of continuous) means higher capital per worker employed. And as was revealed by the Economic Survey of Europe in 1958 "indusrial output has tended to be relatively low in those countries where industrial investment per employed worker has been low and where this relatively small input of new capital has not been compensated through a large rise in employment" [27]. Thus, as the level of industrial investment per worker in the United Kingdom has been less than that in France and Germany [28], we tend to believe that the slow growth of both output and productivity in the first country (relatively to others) was the consequence of low rates of industrial investment per worker combined with a small increase in employment.

When employment stagnates, a given volume of investment will raise the amount of capital per worker faster than where employment rose relatively slowly. It would appear, however, that the wider opportunities provided by a high level of gross investment for taking

(26) In the case of France we are referring to investment of the whole economy.

(27) **ECE 1959,** Geneva, Chapter 2, p. 26.

(28) According to figures of industrial investment presented in the **Economic Survey of Europe in 1958,** the average annual investments in 1953-57 per employ see in 1953 in dollars at 1954 prices, in France, Germany and the United Kingdom were about : 600, 625 and 400 respectively. See **ibid.** chart 6, p. 37, Chapter II.

advantage of technical progress have been a more important influence on productivity than the slowing down of the rise in capital per worker in consequence of a rapid rise in employment. This, in fact, has been the case when the French level of productivity growth is compared with Germany. Thus, in these terms, the French superiority in raising productivity (relatively to Germany and the United Kingdom) has depended less upon the amount of investment per additional worker employed than upon the level of investment in relation to the total number of workers employed or to total output [29].

But the relatively higher increases of German industrial output (relatively to France) and the relatively better performance in both output and productivity (relatively to the United Kingdom) is in fact attributed to the great increases in the industrial labour force, which has been associated with expanded capacities, and to the application of technologies which has been made possible through this expansionary process.

This analysis seems to suggest that Britain has been lagging behind Germany and France in the field of technical progress, and this latter may have been the main factor responsible for the low rate of productivity growth of British industry relatively to France and Germany. This, in fact, may not have been altogther true. For, it was argued earlier that Britain's investment seems to have been relatively more efficient in raising productivity, relatively to output, than German investment, although of course, German industrial output and productivity have been increasing at rates higher than in Britain.

(29) The theory of high productivity growth associated with high investment per employee does not apply when French performance is compared with Germany. Other factors are added to the reasoning mentioned above, First, France had some advantage (relatively to Germany) in the structural distribution of her economy. In other words, French industry was less developed than the German industry at the beginning of the period of comparison. Thus productivity rose most in France which experienced the largest changes in industrial structure. Secondly France's industry had some advantages in being able to make use of some of the unutilised capacities that existed during the early 1950' s.

There are statistics of the rate of growth of fixed assets in the manufacturing industry both in Germany and in the United Kingdom. These are data used to disprove the argument of Britain's lagging in the application of technical progress

Table 6 below shows (a) that gross fixed assets in Britain grew more slowly, relative to output — than in Germany and (b) that they grew more slowly than in Germany relative to productivity. This is just another way of saying that progress in technology and organisation (substituting capital for labour) has been faster in the United Kingdom than in Germany ; for the rate of growth of fixed assets is the outcome of the joint influence of net investment and of the size of the initial capital stock. Hence, on the assumption that there have been no diverging changes within manufacturing, progress must have been slower in Germany than in Britain.

However, we may end this analysis by stating that the growth of investment has been relatively higher in other countries than in Britain. This may have been greatly responsible for the differences in production and productivity rates of growth. Although the trend was towards deepening the structure of British industry, France's experience in this direction suggests that a fuller utilization of British capacities has not been made. This under-utilization of the productive capacities restricted productivity and production growth. The relative inefficiency of British investment, compared with that of France in particular may be attributed to many factors. First, the existence of high margins of unused capacities [30]. Second, it is sometimes argued that Britain has been hampered by the existence of old capacity which could not be thrown on the scrap heap ; whereas Germany, whose industrial capacity had been bombed out of existence could start again from the beginning. This argument, in fact, carries some truth. For if one looks at some of the figures of gross and net investment in

(30) The existence of unused capacities, as was explained earlier, is attributed to the shortage of labour and to the deflationary policies pursued by the government in certain years.

various industrial countries the following is observed. British gross investment when related to output growth compares less favourably with other countries. But in net investment, when related to output growth, a better picture of investment contribution to growth is observed [31]. This leads us to the point that the difference between gross and net investment of British industry is relatively high compared with that of other industrial countries. This, in turn, suggests that a large part of British gross investment may need to be scrapped and replaced by most up-to-date and more productive equipment.

3. *The Impact of Other Factors : Economic Policy and the Balance of Payments.*

The impact of these two related factors, may have worked through two channels in affecting output and productivity growth of British industry. On the one hand, it is possible that the level of investment has been determined directly by the rate of growth of exports ; hence the slower growth of British exports might have been one of the causes of the lower rate of capital formation in the U.K. relatively to other countries. The decline of real fixed investment in British industry in 1952 and in 1958, which occurred simultaneously with a slight drop in exports, makes this argument quite plausible. Germany, and, to a lesser extent, France, enjoying a relative ease in their external account, have been able to let home demand expand freely, while the U.K. has been compelled by the basic weakness of her balance of payments to break and slow down the continuity of several investment booms since 1950 [32].

The impact of the balance of payments and the government

(31) Cf. A. K. Cairncross "The Investment League", **'Factors in Economic Development'**, London, 1962, esp. pp. 146-7.

(32) It must be noted that the main difference in external economic policy between Britain and other continental countries, especially France, was that in the latter group emphasis on securing continuous growth was the main objective, while in Britain, a restrictive economic policy was introduced during a balance of payments crisis. Cf. **ECE** "Economic Survey of Europe in 1958 Chapter 2, p. 22, Geneva.

economic policy on industrial investment, the growth of output and productivity in the U.K. and other countries have not been dealt with in great detail here. We can, however, agrue that exports have played a determining role in encouraging expansion on the continental countries while inhibiting it in the case of the U.K. The relatively unfavourable export performance of Britain resulted in a decline in her share of world manufacturing exports. This decline was due not only to increased total exports of world manufacturing but also, and most important, to a fall in Britain's share by commodity and geographical area [33]. A major explanation of the inadequate increase of exports is sought in the factors making for exports competitiveness ; the most important of all lie in the field of costs and prices. The relatively high costs per unit of output, and hence increased prices of exports were, in fact, the main factors responsible for Britain's relatively poor performance in the exports field, compared with France and Germany. This is clearly indicated in Tables 5, 8 and 9.

Also it may be added that the fall in Britain's net receipts from abroad has been a factor responsible for the relative deterioration of the balance of payments position [34]. Had Britain been able to pay for her imports and other commitments and had she been able to secure a balance in her external account, the process of continuous expansion would have been maintained and the restrictive policies, with all their unfavourable consequences, would not have been greatly needed. This argument seems quite reasonable and, in fact, is more convincing if Britain's external record is observed carefully. For instance, the improvement in the balance of trade in the period 1955-58 was attributed not to a better export performance, it was the result of stagnation.

It may now be concluded from the above analysis that the

(33) Cf. National Economic Development Council, 'Export Trends' London (HMso), 1963.

(34) During the period before the last war Britain used to receive large sums of net receipts from her investments abroad. These earnings helped greatly to pay for the deficit in the balance of trade.

problems underlying the United Kingdom's relatively low rate of growth of output and productivity in the 1950's are complex, and to some extent interlocking. The low rate of growth cannot be ascribed to any inadequacy of overall demand. The problem lay rather in the fact that, in contrast to what was happening in many continental countries, exports did not play a major role in the growth process. The unfavourable export performance of British industry, relative to France and Germany was attributed to relatively high prices. This latter was due mainly to increased costs that resulted from persistent inflationary tendencies during most of the post-war years. As a result of these developments, the aim of economic policy was directed to curb the inflation so as to a overcome the deficit in the balance of payment. While the immediate cause of the relative failure of British exports was the relative high prices, the ultimate cause was the slow growth of productivity which gave rise to increased prices. The diagram below gives an overall picture of the impact of high level of prices on the utilization of inputs and the competitive position in the world market, which applies greatly to Britain's case.

DIAGRAM 1

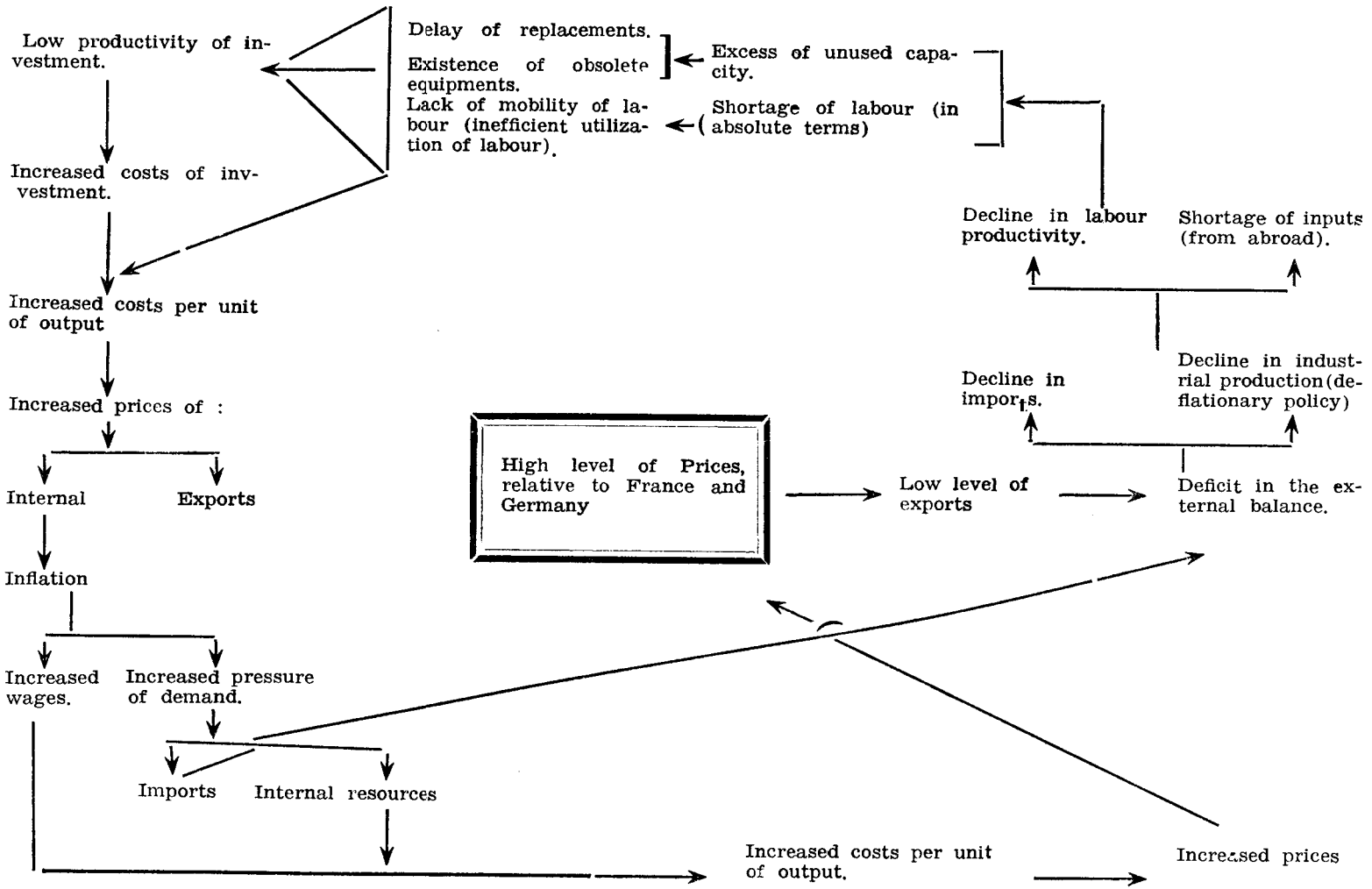
Low productivity of investment.
Increased costs of investment.
Increased costs per unit of output
Increased prices of :
Internal
Exports
Inflation
Increased wages.
Increased pressure of demand.
Imports
Internal resources
Delay of replacements.
Existence of obsolete equipments.
Lack of mobility of labour (inefficient utilization of labour).
Excess of unused capacity.
Shortage of labour (in absolute terms)
Decline in labour productivity.
Shortage of inputs (from abroad).
Decline in industrial production (deflationary policy)
Decline in imports.
High level of Prices, relative to France and Germany
Low level of exports
Deficit in the external balance.
Increased costs per unit of output.
Increased prices

TABLE 2

Distribution of Gross Domestic Product By Industrial Origin

(as per cent of total demostic product)

	United Kingdom	France	Germany
Agriculture, forestry, fishing :			
1950	6	15	10
1960	4	10	6
Industry, construction, public utilities.			
1950	48	47	50
1960	48	46	54
Transports, communications, services.			
1950	46	37	40
1960	48	44	40

Sources : For France and Germany : ECE **'Economic Surveys of Europe'** and **'International Financial Statistics.'** For the United Kingdom : **'National Income and Expenditure'**, 1961.

TABLE 3

Distribution of labour force by sectors

(as per cent of total labour force)

	1954	1957	1960
United Kingdom	100.0	100.0	100.0
Agriculture	4.5	4.2	4.0
Industry	44.3	44.3	41.4
Building	5.7	5.7	6.4
Services	45.5	45.8	48.2
Germany	100.0	100.0	100.0
Agriculture	20.0	17.0	14.4
Industry Building †	46.0	48.3	48.4
Services	34.0	34.7	37.2
France	100.0	100.0	100.0
Agriculture	27.0	25.9	—
Industry	30.0	30.0	—
Building	6.0	6.3	—
Services	37	37.8	—

Sources : **ECE, 'Economic Survey of Europe in 1958 and in 1960'** Appendix A-10, Table VIII and chapter I, p. 10.

† Labour force in building constituted about 6, 7 and 7 per cent of the total labour force in Germany in the above selected years respectively.

TABLE 4

Output per man-hour and Wage Costs in Industry — Index numbers 1953 = 100

	1950	51	52	53	54	55	56	57	58	59	60	61
United Kingdom [1]												
Production	94	98	95	100	108	114	114	116	114	120	129	130
Employment	98	100	98	100	102	105	105	105	105	105	109	111
Wkg. Hrs. per man	99	99	99	100	101	101	100	99	99	100	103	101
Output pr. man hr.	97	99	98	100	105	108	108	110	110	114	115	116
Earnings	81	88	95	100	106	114	124	131	136	142	154	160
Wage Costs	84	89	97	100	101	106	114	113	13	125	134	138
West Germany												
Production	72	85	91	100	112	128	138	147	152	162	180	190
Employment	83	93	96	100	105	114	121	124	130	131	138	143
Wk. hrs. per man	99	99	100	100	100	100	98	93	93	92	96	95
Output pr. man hr.	88	92	94	100	105	112	116	126	127	138	137	140
Earnings	78	89	96	100	103	109	119	133	134	148	165	180
Wage costs	90	97	101	100	97	98	103	107	105	107	120	129
France												
Production	89	99	99	100	110	120	133	142	150	152	167	175
Employment	99	103	102	100	100	101	103	106	105	104	106	107
Wkg. hrs. per man	100	101	100	100	101	101	103	103	103	100	105	105
Output pr. man hour	90	95	97	100	108	117	126	130	140	146	150	155
Earnings	80	84	98	100	107	115	124	134	143	157	170	181
Wage costs	89	90	101	100	98	98	99	102	102	108	113	116

Notes : Employment figures for 1950, 1951 and the years after 1957 are of total manufacturing in the three countries. Figures of working hours per man and of hourly earnings for the years after 1957 have been adjusted according to 1953. Output per man-hour has been obtained by deflating production numbers by the index numbers of man-hours worked. Wage costs have been arrived at by dividing index numbers of hourly earnings into index numbers of output per man-hour. As these figures have been obtained from various sources, the data for output per man-hour and wage costs must be considered as approximate only. **Sources** : **ECEEconomic Surveys of Europe in 1957, 1958 and 1961** — Appendix A-6, table III (1957), Appendix A-8, table VII (1958) to le II, chapter I, p. 27 (1961) ; **General Statistics,** O. E. C. D. September 1963. **Compiled.**

1. Earnings are on weekly basis for the years after 1957 and are for manufacturing industry only. Earnings figures for West Germany and France are on hourly basis.

TABLE 5

Productivity and Earnings in Manufacturing in the U.K., as compared with other Industrial Countries, Increases between 1953 and 1961 †

	per cent per annum U.K.	Other main exporters (average)
Output per hour	2.7	4.5
Earnings per hour	6.4	5.0
Wage costs per unit of output	3.6	0.5

Source : NEDC, **'Conditions Favourable to Faster Growth,'** London, 1963, Table 9, p. 49.

\+ See also A. Lamfalusay, **op.cit.** Table 13, p. 59.

TABLE 6

Yearly Rates of Growth of Gross fixed Assets Output and the Productivity of Labour in British and German Manufacturing Industries

	Gross Fixed Assets	Output	Productivity
United Kingdom	3.2	3.9	2.6
Germany	8.6	8.5	4.8

Sources : U.K. : "On Measuring Capital", by T. Barna in **'The Theory of Capital'**, ed. by F. A. Lutz and D. C. Hague., London, Macmillan, 1961, p. 94, and the **National Economic Review** Germany : A. Lamfalussy, **'The United Kingdom and the Six'** London, Macmillan, 1963, p. 99.

Note : The period covered for Germany is 1953-60, and for Britain, 1952-57.

TABLE 7

The Patterns of Growth in British and German Industry

1953 to 1960

	Germany	United Kingdom
Gross Investment Ratio I/Y	16.6	14.5
Rate of Growth of Output $\frac{dY}{Y}$	8.7	3.7
Rate of Growth of Output per man-hour $\frac{dY}{LH}$ (+)	4.5	2.1
Marginal Capital-Output Ratio $\frac{I}{Y} / \frac{dY}{Y} = \frac{I}{dY}$	1.8	3.9
Investment-Productivity Ratio $\frac{I}{Y} / \frac{d(Y/LH}{y/LH}$ $\frac{I}{LH} / d\,(y/LH)$	3.7	6.9

Sources : A. Lamfalussy **'The U.K and the Six'** 1963, p. 92.
(+) L.H. refers to labour hours worked.

TABLE 8

Indices of Indusrial Production and Exports of Manufactures

(main industrial countries)

1950—60

1953 = 100

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
United States :											
Industrial production	81	89	92	100	93	105	109	110	102	115	119
Exports of manufactures	86	103	102	100	106	115	128	135	122	120	138
Germany :											
Industrial production	72	85	91	100	112	128	138	146	151	162	179
Exports of manufactures	42	72	87	100	127	150	174	201	213	234	279
France :											
Industrial production	87	98	99	100	110	120	133	145	150	156	—
Exports of manufactures	98	119	96	100	110	123	114	129	139	170	195
Japan :											
Industrial production	56	78	85	100	111	122	151	174	175	220	—
Exports of manufactures	81	89	94	100	140	186	222	250	255	303	325
U. K. :											
Industrial production	94	97	94	100	107	112	113	115	114	120	131
Exports of manufactures	110	109	100	100	104	113	120	123	118	132	139

Sources : **International financial Statistics'.**

TABLE 9

Export volume and price indices of manufactures, main industrial countries 1950—61

(selected years)

1953 = 100

	1950	1953	1961
United Kingdom			
Volume	106	100	132
Price	84	100	114
United States			
Volume	92	100	133
Price	89	100	120
Germany			
Volume	58	100	291
Price	80	100	105
France			
Volume	95	100	211
Price	82	100	99
Japan			
Volume	78	100	390
Price	90	100	91

Sources : Tables 1 and other ; and NEDC, 'Conditions favourable to faster growth,' 1963, table 8, p. 49.

Note : The figures have been adjusted to cover the period 1950 to 1961.