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Intereconomics

Suggested Citation: Wabe, J. Stuart (1978) : The comparative performance of UK manufacturing in perspective, Intereconomics, ISSN 0020-5346, Verlag Weltarchiv, Hamburg, Vol. 13, Iss. 11/12, pp. 303-305,
<https://doi.org/10.1007/BF02929261>

This Version is available at:

<https://hdl.handle.net/10419/139578>

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The Comparative Performance of UK Manufacturing in Perspective

by J. Stuart Wabe, Bath *

The view that the productivity performance in UK manufacturing compares unfavourably with that in other European countries is ill-founded. The important conclusion from this analysis is that the fundamental problem in UK manufacturing has been the low level of investment. This would seem to provide the major part of the explanation for the „poor“ comparative performance of UK manufacturing when measured in terms of both labour productivity growth and output growth.

A recent article by a staff member of the National Institute of Economic and Social Research presented a generally depressing picture of the economic performance of United Kingdom manufacturing in comparison with that achieved in other European countries¹. Jones considered the growth of output and labour productivity in Austria, Belgium, France, the Federal Republic of Germany, Italy, the Netherlands and the UK in the years since 1955. His main conclusion was that the growth of labour productivity in the UK was substantially lower than in the other countries and that this was not related to the structure of manufacturing but was purely one of performance. However, the Jones paper is remarkable in that it never mentions investment. The level of investment in UK manufacturing is considerably less than in other European countries and thus we would expect a lower rate of growth for manufacturing output in the UK. It is widely accepted that productivity growth is greater the higher is the growth in output (the two variables are positively correlated) and it will be shown that the UK productivity performance, after making allowance for the lower growth in output, compares favourably with other European countries.

There is growing concern that the benefit from new investment, in terms of additional output, is lower in the UK than for its main competitors. That is to say, the efficiency with which new investment is used in the UK is less than that achieved elsewhere. Such findings are derived

from figures on gross investment and hence they can be misleading. However, it will be argued that a far higher proportion of gross investment in the UK is for replacement purposes and so it is by no means obvious that the benefit from net investment is lower. An increase in the level of gross investment in UK manufacturing to that achieved in the rest of Europe could well give output growth rates which are comparable with these other countries. In short, we have a far less gloomy picture of the UK economy than was presented by Jones.

Productivity and Output Growth

It is well documented that, in a cross section of manufacturing sectors, the growth in labour productivity tends to be higher the larger is the level of output growth. This association, often referred to as the Verdoorn relationship, has been estimated by Kennedy² for Ireland and by George and Ward³ for the UK and the Federal Republic of Germany. The coefficients in Table 1 are obtained when growth in output per worker is regressed on a constant and the level of output growth using the data in the Jones article. Thus the results are based on growth rates for six in-

Table 1
Regression Estimate * of Relationship
between Productivity Growth and Output Growth

	Austria	Belgium	France	Germany	Italy	Netherlands	UK
Output Growth	0.26 (0.19)	0.64 (0.12)	0.49 (0.13)	0.47 (0.13)	0.76 (0.15)	0.68 (0.11)	0.63 (0.13)
Constant	2.79 (1.17)	1.27 (0.72)	1.77 (0.80)	1.84 (0.83)	-0.49 (1.19)	1.30 (0.74)	1.56 (0.46)
R ²	0.08	0.57	0.40	0.38	0.53	0.71	0.51

* Number in brackets is estimated standard error of regression coefficient.

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¹ See D. T. Jones, Output, Employment and Labour Productivity in Europe since 1955, National Institute Economic Review, London, August 1976.

² K. A. Kennedy, Productivity and Industrial Growth: The Irish Experience, Clarendon Press, 1971.

³ K. D. George and T. S. Ward, The structure of Industry in the EEC, Cambridge University Press, 1975.

dustrial sectors over four time periods between the years 1955–73, that is twenty-four observations. Manufacturing was sub-divided into food, drink and tobacco; textiles, leather and clothing; chemicals; basic metals; metal products; other manufacturing. The two metal goods sectors were combined for the Netherlands. The growth rates were for the periods 1955–60, 1960–64, 1964–69 and 1969–73.

Technical change and the investment process is seen as the underlying explanation for the Verdoorn relationship. There will be some level of investment where productive capacity is not growing, that is, all investment is for the replacement of scrapped capital and the level of output is unchanged. Technical progress, however, will mean that new capital will have a higher level of labour productivity than the equipment which is scrapped. Thus we would expect labour productivity to be growing even when output growth is zero and it is of interest to consider whether the constant in the Verdoorn relationship is significantly greater than zero. The higher the rate of output growth the greater will be the level of net investment and, as the additions to the capital stock will have a productivity level which is higher than the original capital stock, this leads to the positive correlation between productivity growth and output growth.

Comparison by Countries

Comparing the equations in Table 1 shows that the relationship between productivity growth and output growth in 1955–73 was similar in Belgium, France, Germany, the Netherlands and the UK. In these countries the two coefficients in the Verdoorn relationship are significantly greater than zero and, more importantly, have similar numerical values. The constant indicates that productivity growth, when output growth was zero, was always close to 1.50 % p.a. The similarity in this value between the five countries is taken as an

indication that their levels of replacement investment were approximately equal. The coefficient on output growth in this group of countries was always close to 0.50. Austria and Italy are the two countries which do not "conform" to this general pattern. In Austria the coefficient on output growth is not significant while the constant is significant and twice the value found in the other countries. Italy presents a further contrast in that the constant term is not significant and the significant coefficient on output growth is larger than in other countries.

Consideration of the UK data suggests that, for any given output growth, there was a marked increase in productivity growth in 1969–73. Thus a second equation was estimated with a "dummy" variable to measure the extent of any upward shift in the Verdoorn relationship in the post-1969 period. These results, which are not reported, confirm that there was a significant jump in productivity growth in the UK which was not experienced in the other countries. Adding the dummy variable and the constant indicates that productivity growth in UK manufacturing in 1969–73 was approaching 3 % per annum even when output growth was zero. We can conclude that in this period the UK productivity performance was in fact superior to that in other European countries.

Table 2 presents data on investment levels and output growth rates in the seven countries under consideration. The data sources used did not have information on manufacturing investment for Austria and Germany. However, these two countries had the highest percentages for capital formation in total GDP in 1963–65 and it seems realistic to assume that their levels of investment in manufacturing were at least equal to those in Belgium, France, Italy and the Netherlands. Gross fixed capital formation in the UK in 1963–65 was only 12.6 % of manufacturing GDP. The investment level in manufacturing was some 50 % higher in the other countries and this is the criti-

Table 2
Investment Levels and Output Growth Rates

	Gross Fixed Capital Formation as % of GDP in 1963–65		Annual % Growth Rate in 1964–69		Gross Fixed Capital Formation as % of GDP in 1968–70		Annual % Growth Rate in 1969–73	
	Manu- facturing	Total GDP	Manu- facturing	Total GDP	Manu- facturing	Total GDP	Manu- facturing	Total GDP
Austria	N.A.	28.8	5.6	4.2	N.A.	25.8	7.2	6.3
Belgium	18.5	23.4	5.7	4.0	17.0	24.4	5.4	5.2
France	18.9 ^a	27.7	6.5	5.9	19.0 ^a	29.0	6.5	6.1
Germany	N.A.	30.0	6.1	4.6	N.A.	28.2	4.6	4.5
Italy	18.7 ^b	24.1	8.0	5.6	16.8 ^b	23.1	5.3	4.1
Netherlands	22.0	27.1	6.6	5.7	20.0	27.8	5.2	4.7
UK	12.6	19.2	3.2	2.5	14.4	21.7	2.8	2.9

^a Manufacturing and construction. — ^b Manufacturing, mining and quarrying, electricity, gas and water, and construction.

Sources: Growth rates for manufacturing and total GDP from Jones op. cit. Other data from: Eurostat National Accounts Yearbook, OECD National Accounts Statistics and UN Yearbook of National Accounts Statistics.

cal difference between the UK and its European competitors.

Dividing the investment percentage by the growth rate gives the incremental capital output ratio. The higher the value of this ratio the greater is the level of investment which is required to generate a 1% growth in manufacturing output. In the second half of the 1960s this ratio for UK manufacturing was almost 4 (12.6 divided by 3.2) compared to an average value of 3 in the other countries. Notice that a short time lag has been introduced; the investment data are for 1963–65 and the output growth rate is for 1964–69. Calculations of this sort, however, are misleading because they are based on gross investment and it does not necessarily follow, as suggested by Samuels *et al.*⁴, that the productivity of UK investment has been low. The results from the Verdoorn relationship suggest that the level of replacement investment in the UK has been similar to those in Belgium, France, Germany and the Netherlands. Hence a far higher proportion of UK gross investment in manufacturing was for replacement and so it is by no means clear that the benefit, in terms of additional output, from *net* investment has been less in the UK than in these other countries. This conclusion can be stated in an alternative way. If UK replacement investment in 1963–65 was 5% of manufacturing GDP then the level of UK net investment at this time was only 7.6%. A similar rate of replacement investment in the other countries implies that their levels of net investment were equal to some 14% of manufacturing output. A 50% increase in gross investment in UK manufacturing in 1963–65, from 12.6% to 18.9%, would have given an investment level equal to that in Belgium, France and Italy. Such figures would imply an almost doubling in the net addition to the UK stock of capital and this

could well have resulted in a similar increase in the manufacturing growth rate. Hence a 50% increase in the level of gross investment in manufacturing might have been needed for the UK growth rate to reach the 6% level, this being the norm in Europe in the second half of the 1960s.

There were no dramatic changes in investment levels when 1963–65 is compared with 1968–70. For UK manufacturing the level of investment increased from 12.6% to 14.4% and the annual rate of growth of output declined slightly from 3.2% to 2.8%. Are we thus to conclude that the benefit from manufacturing investment declined in the UK? The Verdoorn relationship indicated a substantial increase in the constant term for 1969–73 (the dummy variable was significant) and we have argued that this term reflects the level of replacement investment. Thus the increased investment level in 1968–70 could well have been entirely devoted to replacement purposes. Again we see the dangers of judging the productivity of new capital from data on gross investment.

The important conclusion from this analysis is that the fundamental problem in UK manufacturing has been the low level of investment. This would seem to provide the major part of the explanation for the "poor" comparative performance of UK manufacturing when measured in terms of both labour productivity growth and output growth. Such a conclusion helps to put the UK problems in perspective and shows that they are potentially solvable. Merely to say that the problem is one of performance tends to confirm the most ill-founded views which people in Europe have of the UK. The productivity performance in UK manufacturing, after making allowances for the lower investment level, compares favourably with that in other European countries and it is not possible to support the view that investment in UK manufacturing is used inefficiently.

⁴ J. M. Samuels, R. E. V. Groves and C. S. Goddard, *Company Finance in Europe*, Institute of Chartered Accountants in England and Wales, London, 1975.

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ISBN 3-87895-175-2

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