

**UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT**

**DE-INDUSTRIALIZATION  
AND THE BALANCE OF PAYMENTS  
IN ADVANCED ECONOMIES**

*Robert Rowthorn*  
*Ken Coutts*

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**DISCUSSION PAPERS**



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# DE-INDUSTRIALIZATION AND THE BALANCE OF PAYMENTS IN ADVANCED ECONOMIES<sup>1</sup>

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## *Abstract*

*This paper defines de-industrialization as a secular decline in the share of manufacturing in national employment. De-industrialization, in this sense, has been a universal feature of economic growth in advanced economies in recent decades. The paper considers briefly what explains this development and quantifies some of the factors responsible. It then examines the experience of the United Kingdom and the United States, which are two countries that have combined rapid de-industrialization with a strong overall economic performance. The paper considers both the domestic situation of manufacturing industry in these countries and its foreign trade performance, and examines in detail the United Kingdom balance of payments, and documenting how improvements in the non-manufacturing sphere have helped offset a worsening performance in manufacturing trade. It concludes that manufacturing still matters to economic performance even at the highest levels of economic development, and that “premature de-industrialization” could lead to serious mismanagement of the integration of developing countries into the global economy.*

## **I. DE-INDUSTRIALIZATION**

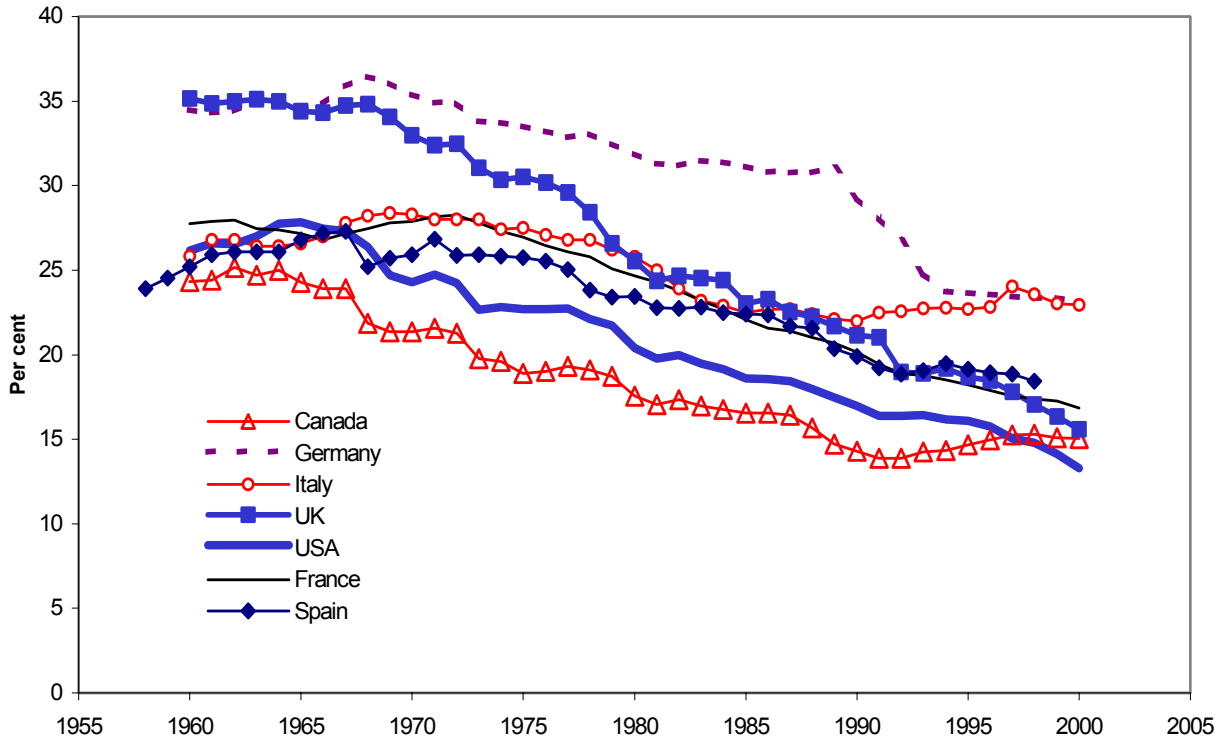
In the course of economic development virtually all countries follow a broadly similar trajectory. As development gets under way, the share of agriculture in national employment falls and there is a rapid increase in the share of manufacturing. This process is known as ‘industrialization’. At a certain point, however, the share of manufacturing stabilizes and then starts to fall back again. There is a corresponding increase in the share of services in national employment. By analogy with the preceding phase, this process is often described as “de-industrialization”. Note that we are talking here about relative shares. If total employment is growing fast enough, then the share of manufacturing may decline rapidly even though the absolute number of people working in this sector is actually rising. This has been the situation in Spain in recent years. Note also that employment is not the same thing as production. In many advanced economies, manufacturing productivity is increasing rapidly with the result that this sector is producing more output with fewer workers. Thus, de-industrialization in employment terms does not imply falling production.

Chart 1 provides some information about the manufacturing sector in Western Europe and North America. There has been a dramatic fall in the share of this sector in national employment in all of the countries shown. This decline is still continuing in most of them, although there are a few exceptions, notably Canada and Italy, where the manufacturing share has now stabilized, for the time being at least. As can be seen from chart 2, the employment share of manufacturing has also been falling rapidly in Japan, the Republic of Korea, Singapore and Taiwan Province of China. These Asian countries are now facing the same problems and uncertainties that have been confronting Europe and the United States for decades.

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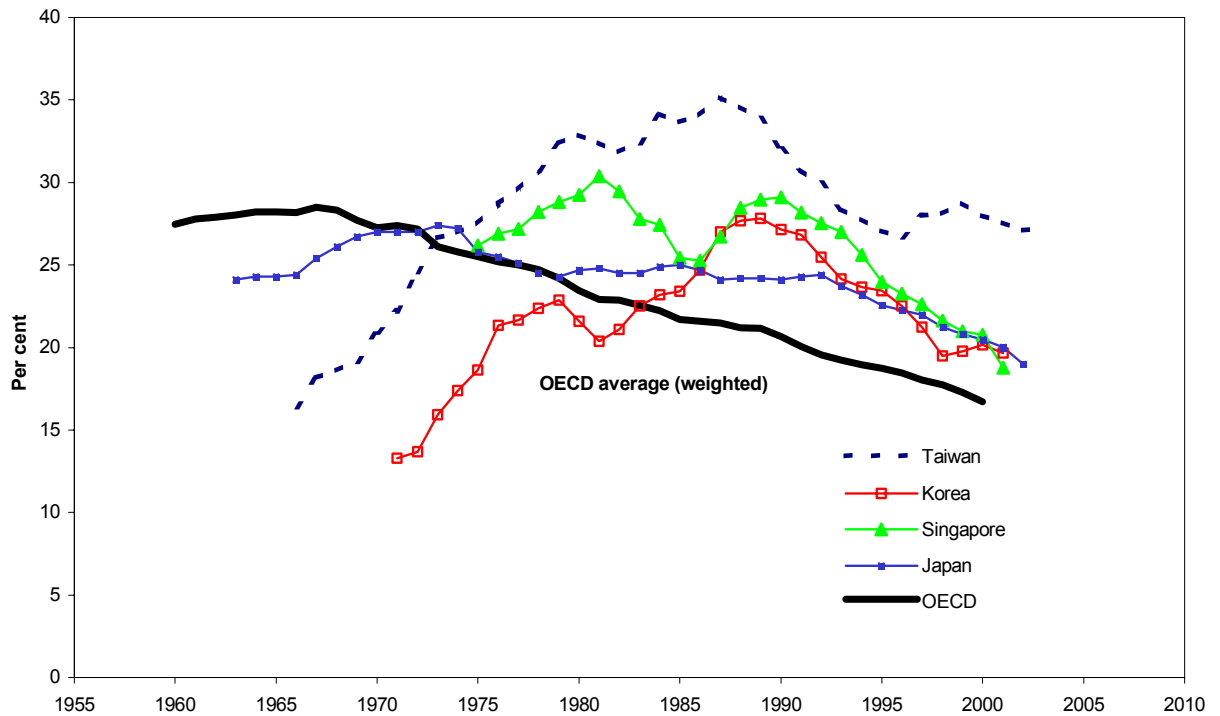
<sup>1</sup> This is an expanded version of a paper by Robert Rowthorn at an International Conference on “De-industrialisation and Industrial Re-structuring” on 5 December 2003 at the Renaissance Seoul Hotel, Seoul, Republic of Korea. The authors are grateful to Alicia Rapin of UNCTAD for providing in convenient form most of the data used for the regression analysis and some of the charts, and to Andrew Glynn for helpful comments on an earlier version.

**Chart 1**  
Share of manufacturing employment in Europe and North America



Sources: OECD Labour Force Statistics supplemented by the ILO Database on Labour Statistics and the Statistical Yearbook of the Republic of China (Taiwan Province of China), various issues.

**Chart 2**  
Share of manufacturing employment in selected Asian countries



Sources: See chart 1.



The causes and significance of de-industrialization have been debated with fluctuating intensity since the process first began. Some commentators regard declining manufacturing employment as a symptom of economic failure and a harbinger of impending impoverishment. For them the primary objective of public policy should be to halt or reverse this process. Others regard declining manufacturing employment as a normal feature of economic growth in advanced economies. They see it as an inevitable feature of structural change that may create serious problems in the short and medium run, but is potentially beneficial in the longer run. For these commentators, the primary aim of public policy should be to facilitate change and smooth the transition to a new economic structure. In reality, the choice is never quite as stark as this and most commentators take an intermediate position. They recognize the inevitability and potential benefits of structural change, but they also recognize that some of the developments in manufacturing may be both undesirable and avoidable. These developments may reflect the failings of specific industries or firms that would have a viable future if their failings could be overcome.<sup>2</sup>

A variety of reasons have been put forward to explain why the employment share of manufacturing should fall in advanced economies. These include the following:

1) *Specialization*. Certain activities such as design, catering and transport that were previously performed in-house by manufacturing firms are increasingly performed by specialist service providers. This represents a re-classification rather than a genuine shrinkage in the manufacturing sector. A wide definition of the manufacturing sector would include all of the service inputs that are embodied in the final output of this sector. If this were done, the manufacturing sector would appear larger than it is in official statistics, and employment in this broadly defined sector would have declined less than these statistics imply. Thus, part of the decline in manufacturing employment may be merely a statistical artefact caused by shifting classification. However, it seems implausible that this accounts for more than a modest fraction of the huge recorded fall in the share of manufacturing employment in advanced economies over the past thirty years.

2) *Consumption*. As incomes rise in poor countries during the course of industrialization, the proportion of expenditure devoted to food declines, and consumers purchase more manufactured goods. This is known as Engel's Law. The sociologist Daniel Bell (1976) in his theory of post-industrial society predicted that the pattern of consumer demand would eventually shift away from manufactures towards services. The evidence for "Bell's Law", as it might be called, is mixed. It is true that the share of monetary income spent on manufactured goods is now falling. However, this is not because the real quantity of manufactured goods consumed in advanced economies is stagnating. On the contrary, as everyone knows from personal experience, the amount of electronic and mechanical goods consumed by the average citizen of these countries is mushrooming. The falling share of monetary income spent on such goods is not due to the saturation of demand for manufactures, as Bell's Law would imply. What it reflects is a rapid fall in the relative price of manufactures. Rising imports from low wage countries, together with rising productivity at home, mean that manufactured goods in the advanced economies are now so cheap that consumers can buy a lot more of these goods whilst spending a smaller fraction of their income on them.

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<sup>2</sup> See Rowthorn and Wells (1987) for an extensive discussion of this and related issues.

3) *Productivity*. By definition, the growth rate of labour productivity is equal to the growth rate of output *minus* the growth rate of employment. Thus, if output in two sectors is increasing at the same rate, the sector with the faster productivity growth will have the slower employment growth and vice versa. The employment share of the most dynamic sector will decline. This is simply a matter of arithmetic. Conventional statistics indicate that, on average, the real output of manufactured goods in the advanced economies has risen at about the same rate as the real output of services over the past thirty years. These statistics also indicate that in most countries the growth rate of labour productivity in the manufacturing sector has been much faster than in services. Thus, to maintain its share of real output, the manufacturing sector has required a decreasing share of total employment, whilst to achieve the same result, the service sector has required an increasing share of employment. To keep up with the more dynamic manufacturing sector, the service sector has absorbed an ever-increasing share of total employment, which it has acquired at the expense of manufacturing.<sup>3</sup> This arithmetic suggests that the relative decline of manufacturing employment has been mainly the result of rapid productivity growth in this sector. In a recent paper on the United States, Triplett and Bosworth (2003) show that productivity growth in the service sector has accelerated markedly over the past decade. However, manufacturing industry has experienced a similar acceleration, so the gap between productivity growth in manufacturing and services remains as large as ever.<sup>4</sup>

4) *International trade*. International trade affects manufacturing employment in a variety of ways. It may increase productivity in this sector by stimulating competition and encouraging domestic firms to produce more efficiently. Competition from imports may also increase productivity by eliminating low value-added activities or inefficient firms. To pay for imports a country may export goods and services to foreigners, it may use its income from investments abroad, or it may borrow. These responses have diverse implications for the domestic manufacturing sector, which are beyond the scope of this paper to explore. However, a few comments about trade with low-wage countries are in order.

To the extent that manufactured imports from low-wage countries are financed by the export of manufactured goods from the advanced economies this will generate new manufacturing jobs in the exporting countries. For example, in return for clothes from China the advanced economies may export sophisticated equipment. This exchange will eliminate jobs in the clothing industry of the advanced economies but create new jobs in the equipment industries. However, the number of jobs lost in the low value-added clothing sector will be much greater than the new jobs created in the high value-added equipment industries.<sup>5</sup> As a result, there will be a net loss of jobs in the manufacturing sector as a whole.

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<sup>3</sup> This argument was first advanced systematically by Baumol (1967) and Fuchs (1968) and was developed at length in Baumol, Blackman and Wolff (1989).

<sup>4</sup> Table 1 of Triplett and Bosworth (2003) indicates that the annual growth rate of labour productivity in 27 service industries (employment weighted) was on average 1.5 per cent over the period 1987–1995 and 2.6 per cent over the period 1995–2000. According to the United States Bureau of Labor Statistics, statistics for output per worker hour, manufacturing productivity grew by 2.9 per cent and 4.0 per cent per year respectively. Thus, in each period manufacturing productivity growth was around 1.3 per cent a year faster in manufacturing.

<sup>5</sup> This point is explored at length below.

5) *Investment*. The above discussion describes the evolution of the manufacturing sector under the impact of rising incomes, differential productivity growth, relative price changes, and foreign trade. Superimposed on this evolution is the influence of other factors such as the share of fixed investment in total spending. Investment expenditure is skewed towards manufactured goods, such as machinery and building materials, so that a higher rate of investment will increase the share of manufactured goods in total demand, and thereby raise the share of manufacturing in real output and employment.

## II. QUANTIFICATION

In an article written for the IMF a few years ago, Rowthorn and Ramaswamy sought to quantify some of the above effects (Rowthorn and Ramaswamy, 1999). Between 1970 and 1994 the employment share of manufacturing in the advanced economies as a whole fell by 8.7 percentage points. They estimated that about four fifths of this decline was due to internal factors such as productivity growth and changing expenditure patterns, and about one fifth to trade with low wage economies. They also estimated that for every 4.4 manufacturing jobs that were lost through competition from low-wage imports, there was on average one new manufacturing job created through the export of more sophisticated manufactured goods (Rowthorn and Ramaswamy, 1999).

The above estimates are now quite old and may have been overtaken by events, such as the growth of imports from China. We have therefore extended and updated the econometric analysis of Rowthorn and Ramaswamy. The previous study covered a panel of 18 industrial countries over the period 1964–1994, whereas this analysis covers 23 countries over the period 1963–2002. The additional countries are Ireland, Portugal, Switzerland, the Republic of Korea and Taiwan Province of China. There are also other differences. A more convenient functional form is used here to express the relationship between manufacturing employment and other variables, and some variables are measured differently. Additional variables are also introduced. However, these are mostly minor changes and the findings of this analysis are similar to those of the previous study.

The regression analysis is based on equations of the following form, where *EMPSHARE* is the share of manufacturing in civil employment, *Y* is per capita income and the  $Z_i$  are other variables. The latter include dummy variables for individual countries to correct for international differences in

$$EMPSHARE = a_0 + a_1 \log_e Y + a_2 (\log_e Y)^2 + \sum_{i>2} a_i Z_i + error$$

measurement practices and other unexplained “fixed” effects. There are also specific dummies for Germany to allow for the impact of reunification in 1990 and subsequent adjustment. To capture the influence of international trade on economic structure, there are two variables, *TRADEBAL* and *LDCIMP* that were used in the previous study. The former is the overall trade balance in manufactured goods (total exports *minus* total imports); the latter is equal to manufactured imports from developing countries. There are also two new trade variables: *OPEN* and *IMPCHINA*. The former is equal to manufactured exports *plus* imports; the latter is equal to manufactured imports from China. All trade variables are expressed as a percentage of GDP measured in United States dollars at current market prices.

The purpose of *TRADEBAL* is to capture the effect of overall manufacturing trade performance on the structure of employment. The variable *OPEN* is included to see whether greater openness to foreign trade leads to higher labour productivity, and hence less employment, in the manufacturing

sector. The variable LDCIMP is designed to capture the effects of competition from low-wage countries on manufacturing employment in the advanced economies. These effects include increased efficiency in activities that compete directly with low-wage producers, together with shifts in the composition of manufacturing towards higher value-added, skill-intensive or capital-intensive activities. The variable IMPCHINA is included to see whether the low-wage effect is greater for imports from China than from other low-wage economies.

Finally, there is the variable FIXCAP, which is gross domestic fixed capital formation expressed as a per cent of GDP at current market prices. The rationale for using this variable is that capital investment is manufacturing intensive, and a change in the rate of investment should therefore have a greater impact on the demand for manufactured goods than on the demand for other types of output.

Table 1 reports the econometric results using pooled data from all countries in the sample over the whole time period. There is strong evidence of a hump-shaped relationship between manufacturing employment and per capita income. The employment share of manufacturing rises in the earlier stages of economic development and falls back at high levels of per capita income. The estimated turning point is around US\$9,500 (1995 PPP) per capita which most OECD countries had reached by 1970 and some well before. A number of the more advanced East Asian economies have now surpassed this point and the share of manufacturing employment has been falling in these countries for some years (chart 2).

As expected, fixed capital formation exerts a positive influence on manufacturing employment. There is also evidence that the overall trade balance in manufactures has a significant impact on manufacturing employment. The coefficient of TRADEBAL is positive and statistically significant in most equations, suggesting that countries with a large trade surplus in manufactures tend to have a larger than average manufacturing sector. The magnitude of this coefficient is consistent with the results obtained in the previous IMF study. The coefficient of OPEN is negative and significant in most equations, suggesting that more open economies have higher productivity, and therefore less employment, in manufacturing.

The coefficient of LDCIMP is negative in all equations and is mostly significant. The coefficient of IMPCHINA is positive and implausibly large in equations (3) and (5), but negative and significant when first differences are used in equation (6). Taking these findings as a whole, the estimates support the view that imports from low-wage economies impact negatively on manufacturing employment in the industrial countries. However, it is not clear to what extent this impact is greater than average in the case of imports from China.

### **Accounting for de-industrialization**

This section uses the regression results shown in table 1 to quantify the influence of various factors that have contributed to de-industrialization over the past decade (1992–2002). The table contains a number of equations, so there is a question as to which is the most appropriate. After examining the residuals, equation (4) seems to yield the best fit for recent years. It also has plausible coefficients. The decomposition that follows is therefore based on this equation. Another equation could also have been used, but amongst those with plausible coefficients the results are much the same.

**Table 1**  
**Estimates of the share of manufacturing in employment, 1962–2002**  
*(Dependent variable = EMPSHARE)*

<i>Explanatory variables</i>	<i>Equation Number</i>					<i>First differences</i>
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>	<i>(5)</i>	<i>(6)</i>
Log <sub>e</sub> Y	117.67** (14.02)	152.43** (26.73)	154.94** (27.36)	145.41** (25.98)	147.48** (26.11)	96.99** (10.41)
(Log <sub>e</sub> Y) <sup>2</sup>	-6.40** (14.12)	-8.39** (27.06)	-8.52** (27.69)	-7.95** (26.01)	-8.06** (26.13)	-5.24** (10.44)
TRADEBAL	.357** (19.86)	.161** (9.51)	.164** (8.53)	.257** (11.39)	.250** (10.92)	-.016 (0.96)
OPEN				-.106** (7.75)	-.095** (6.57)	.049** (4.93)
LDCIMP	-1.619** (10.13)	-.944** (7.06)	-1.772** (8.01)	-.491** (3.45)	-.976** (3.94)	-0.227 (1.62)
IMPCHINA			2.423** (4.67)		1.280* (2.39)	-.779** (2.14)
FIXCAP	.100** (3.01)	.246** (8.85)	.252** (9.18)	.285** (10.41)	.284** (10.42)	.095** (5.58)
Country dummies	No	Yes	Yes	Yes	Yes	No
R <sup>2</sup>	.495	.850	.853	.859	.860	.120
Turning Point	\$9,841	\$8,842	\$8,898	\$9,410	\$9,374	\$10,388
N-S balanced trade ratio	.55	6.9	11.8	5.7	8.5	4.9

**Sources:** Regression analysis uses trade data from the UNCTAD database, employment shares from *OECD Labour Force Statistics* supplemented by the *ILO database on labour statistics* and the *Statistical Yearbook of the Republic of China (Taiwan Province of China)*; per capita income and investment data from the *OECD National Accounts*.

**Notes:** ‘\*\*’ (‘\*’) denote significance at the 1 per cent (5 per cent) level; absolute t-values are shown in brackets; constant terms are omitted for clarity. All regressions are based on a sample consisting of the following countries: Australia, Austria, Belgium-Luxembourg, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, United Kingdom, United States, the Republic of Korea and Taiwan Province of China. Variables are defined as follows:

EMPSHARE = percentage share of manufacturing in civil employment. Y = GDP per capita in 1995 United States dollars at PPP. TRADEBAL = manufactured exports – manufactured imports. OPEN = manufactured exports + manufactured imports. LDCIMP = manufactured imports from developing countries (United Nations definition excluding the Republic of Korea, Singapore and Taiwan Province of China). IMPCHINA = manufactured imports from China. FIXCAP = gross domestic fixed capital formation.

TRADEBAL, OPEN, LDCIMP, IMPCHINA and FIXCAP are all expressed as percentages of GDP at current market prices. Exports are measured fob and imports are measured cif. In addition to country dummies (fixed effects) there are shift and adjustment dummies for Germany to allow for the effects of reunification. These reunification dummies are equal to zero for  $t \leq 1990$ ; the shift dummy is equal to 1 for  $t > 1990$ ; the adjustment variable is equal to  $(t-1990)/6$  for  $1991 < t \leq 1996$  and to 1 thereafter. Equation (6) contains no constant or dummies apart from first differences of the German reunification dummies.

Table 2 decomposes the changes in manufacturing employment into various components using the regression coefficients shown in equation (4). The headings in the table are self-explanatory with the exception of the component labelled “normal growth”. This component covers all of the effects which would normally be associated with rising per capita income in a closed economy, and thus takes into account both the income elasticity of demand for manufactures and the influence of normal productivity and price changes. It is estimated from the coefficients of  $\log Y$  and  $(\log Y)^2$  in equation (4). Note that this component excludes the effect of output and productivity changes due to international trade, in particular the abnormal productivity growth induced by competition from low-wage imports. These are included under the various trade headings.

**Table 2**  
**Explaining de-industrialization, 1992–2002**

	<i>Change in percentage share of manufacturing employment</i>	<i>Change due to:</i>						<i>Unexplained residual</i>
		<i>Normal growth</i>	<i>Investment</i>	<i>German restructuring</i>	<i>Total internal</i>	<i>North-South trade</i>	<i>Other trade</i>	
OECD Countries	-4.0	-2.4	-0.2	-0.4	-3.0	-1.2	-0.2	0.5
United States	-3.7	-4.1	0.6	0.0	-3.4	-1.6	-0.2	1.5
European Union	-3.9	-1.6	-0.3	-0.9	-2.8	-0.9	-0.1	0.0
Japan	-5.1	-1.0	-1.8	0.0	-2.9	-1.1	-0.2	-0.9
Republic of Korea	-6.5	-1.3	-2.9	0.0	-4.2	-1.6	0.2	-0.8
Taiwan Province of China	-3.2	-2.7	-1.0	0.0	-3.7	-2.4	-0.9	3.7

**Sources:** See table 1.

**Notes:** OECD refers to all the countries in our sample except for the Republic of Korea and Taiwan Province of China. This table decomposes changes in the percentage share of manufacturing employment. The estimates shown here are based on regression equation (4) in table 1. *Normal growth* is estimated from the income coefficients in equation (2); it includes the effects of the productivity and demand shifts that are normally associated with economic growth. It excludes the structural changes due to trade with low wage countries. These are included under the heading *North-South trade*. *German restructuring* refers to the loss of German manufacturing jobs due to restructuring following reunification.

The main conclusion from our decomposition is that trade with low-wage economies has been a significant factor behind recent de-industrialization in many of the countries in our sample. However, in most cases it has been less important than internal factors such as productivity growth and shifting patterns of demand. In the sample as a whole, internal factors were about twice as important as North-South trade in accounting for the relative decline of manufacturing employment since 1992. One interesting feature of the results is the unexplained positive residual in recent years for the United States, where the share of manufacturing employment has fallen by less than the predicted amount. The same is true of Canada and Italy, where the model fails to explain why the share of manufacturing employment has now been stable for some years.

### North-South trade

From the estimates shown in table 1 it is possible to calculate the impact of North-South trade on the structure of employment in advanced economies. The answer depends on which equation is used. Suppose that manufactured exports to the South increase by 1 per cent of GDP. According to equation (4), which is arguably the most accurate, this will cause the share of manufacturing employment to rise by 0.15 percentage points. Conversely, if manufactured imports from the South increase by 1 per cent

of GDP, the result will be a 0.85 percentage point fall in the share of manufacturing jobs.<sup>6</sup> Thus, one dollar's worth of imports from the South destroys 5.7 times as many Northern manufacturing jobs as are created by one dollar's worth of exports to the South. The other equations in table 1 yield ratios of between 4.9 and 11.8. These estimates are all higher than the figure of 4.4 obtained in the earlier IMF study. The increase may reflect the recent growth of very cheap imports from China. These calculations reveal the origin of the "balanced trade effect", whereby imports from the South reduce manufacturing employment in the North even when they are matched by an equal value of Northern exports.<sup>7</sup>

Equation (4) implies that, amongst the richer countries in our sample, imports from the South have eliminated manufacturing jobs equivalent to between 1.5 per cent and 5 per cent of total employment over the past forty years. For the United States the figure is 3.0 per cent and for the average OECD country in our sample it is 2.3 per cent. The corresponding estimates for new manufacturing jobs created by exports to the South are 0.3 per cent and 0.4 per cent of total employment respectively. Given that total employment in the OECD countries in our sample is almost 400 million, this suggests that around 9 million manufacturing jobs have been lost because of Southern competition and around 1.5 million created by additional exports to the South. If we restrict attention to the past decade, the imbalance between manufacturing jobs created and destroyed is even more striking. Equation (4) implies that, in the OECD countries in our sample, exports to the South created an extra 0.4 million manufacturing jobs over the period 1992–2002. During the same period they eliminated 5.4 million manufacturing jobs giving a net loss of 5 million. This is not a huge figure compared to total employment of 400 million, but the impact on particular types of worker or on certain regions has been much greater than such a comparison would suggest.

### III. THE UNITED STATES AND THE UNITED KINGDOM COMPARED

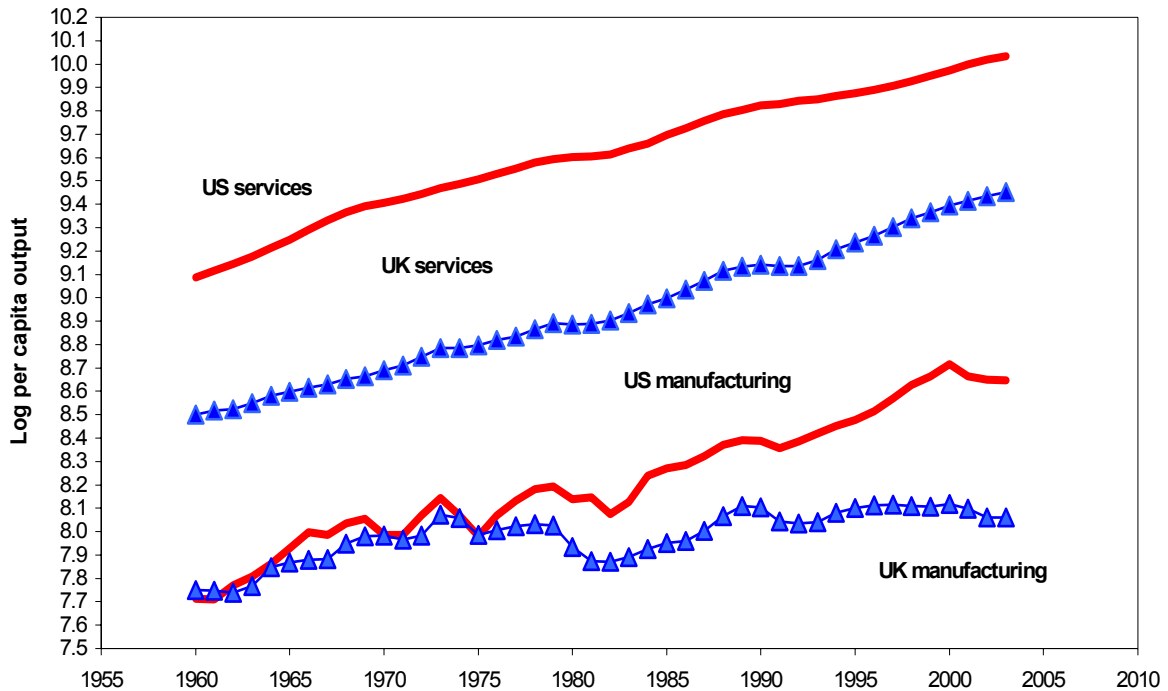
The rest of this paper will focus mainly on the United States and the United Kingdom. These countries exhibit some important similarities. They are regarded as two of the more dynamic OECD economies and are often held up as models by those urging economic reform in Europe and Japan. In both countries, a widely praised economic performance has been accompanied by a prolonged and massive fall in the employment share of manufacturing. Both countries have experienced a prolonged decline in their manufacturing trade balance and in both of them this balance is now in deficit. There are also important differences. The United States has the world's strongest manufacturing sector, whereas manufacturing in the United Kingdom is in perennial difficulty. Although both countries now have a large deficit in their manufacturing trade, the significance of this deficit is different. The United States deficit is financed by borrowing abroad and is probably not sustainable over the long run. The United Kingdom deficit, on the other hand, is largely covered by income from overseas investments and by the rapidly growing earnings from knowledge-based services. Thus, although the United Kingdom has a much weaker manufacturing sector than the United States, its external position taken as a whole is stronger.

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<sup>6</sup>These effects are derived as follows. An increase of 1 percentage point in the ratio of manufactured exports from the North to GDP implies a change of +1 unit in the variables TRADEBAL and OPEN. According to equation (4) in table 1, this will cause EMPSHARE to change by  $(0.257)(1) + (-0.106)(1) = 0.151$  units. Conversely, suppose that the ratio of manufactured imports from the South to GDP increases by 1 percentage point. This will cause the variables TRADEBAL, OPEN and LDCIMP to alter by -1, +1 and +1 units respectively. From equation (4), it follows that EMPSHARE will change by  $(0.013)(-1) + (-0.095)(1) + (-0.976)(1) = -0.854$ . The balanced trade ratio in this case is equal to  $0.854/0.151 = 5.7$ .

<sup>7</sup>The balanced trade effect was first emphasized by Wood (1994).

**Chart 3**  
**Real output per head of population, 1960–2003**  
*(In United States dollars, 1995 at PPP)*



**Sources:** Current price value-added for 1995 was taken from the OECD *National Accounts*, Volume 2, 1981–2001. The UK values were then converted to US\$ 1995 using the following exchange rates: manufacturing \$0.7=£1, services \$0.58=£1. These exchange rates were chosen following inspection of the OECD purchasing power parities for various types of expenditure. Output series were then derived by extending the 1995 figures forwards and backwards using volume indices for real value-added.

Let us explore some of these points in more detail.

## Production

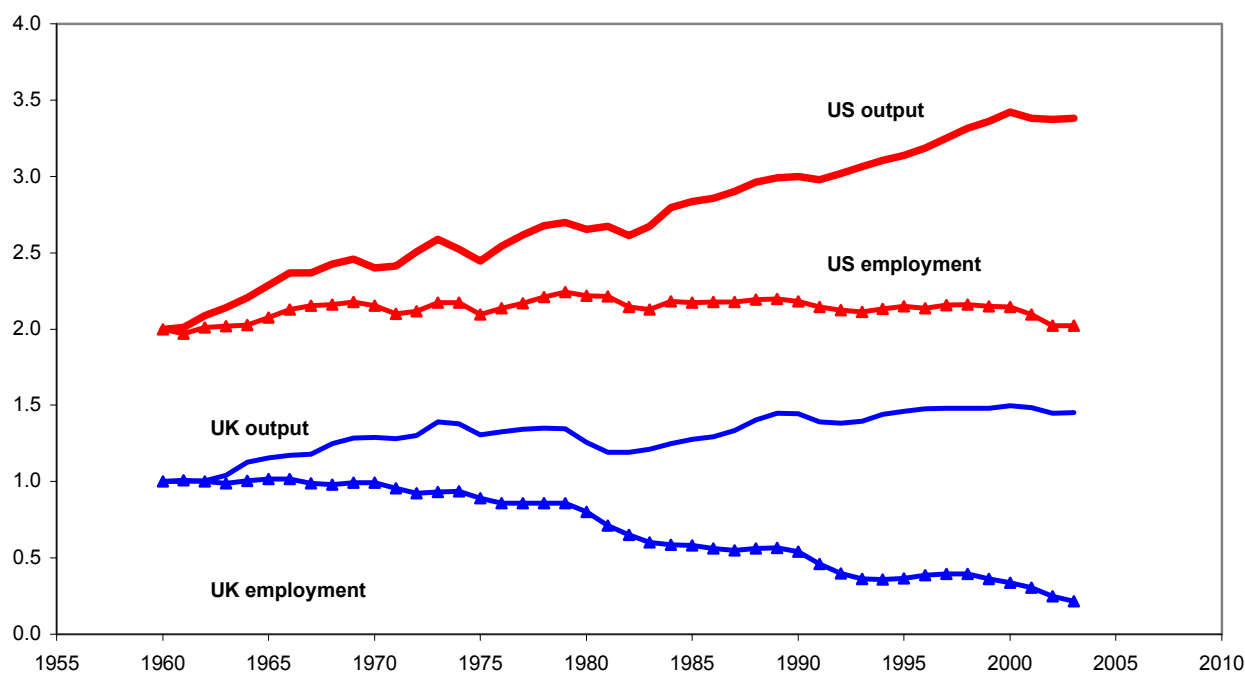
Chart 3 compares production in the United States and the United Kingdom. The output series in this chart are measured in constant prices at purchasing power parity. This gets rid of differences caused by inflation, fluctuating exchange rates and different price levels in the two countries. The series are our own estimates and they are inevitably rather crude. However, they are accurate enough for their present purpose.

As can be seen from the chart, the per capita output of manufactures was similar thirty years ago in the United Kingdom and the United States. Productivity was much higher in the United States but this was largely offset by the fact that a much greater fraction of the British population was employed in the manufacturing sector. Since then manufacturing employment has fallen dramatically in the United Kingdom and the productivity gap between the two countries has got wider. As a result, the United States now produces roughly twice as many manufactured goods per head of population as the United Kingdom. The picture is much more favourable to the United Kingdom in the service sector. Per capita output of services is lower in the United Kingdom than in the United States, but the gap is relatively small and has been getting narrower in recent years. This strong performance reflects the contribution of new service exports that have helped to raise the overall growth rate of the United Kingdom service sector.



The contrast between manufacturing in the two countries is further illustrated in chart 4 which shows what has happened to output and employment. The series in this chart are logarithmic indices which have been scaled for clarity.<sup>8</sup> The widening gap between the output and employment indices for each country is due to productivity growth, and the width of this gap indicates the cumulative increase in productivity since 1960.

**Chart 4**  
**Manufacturing output and employment, 1960–2003**  
*(Logarithmic indices)*



**Sources:** Employment from *OECD Labour Office Statistics*; output estimated from *National Accounts* data on real value-added and OECD purchasing power parities.

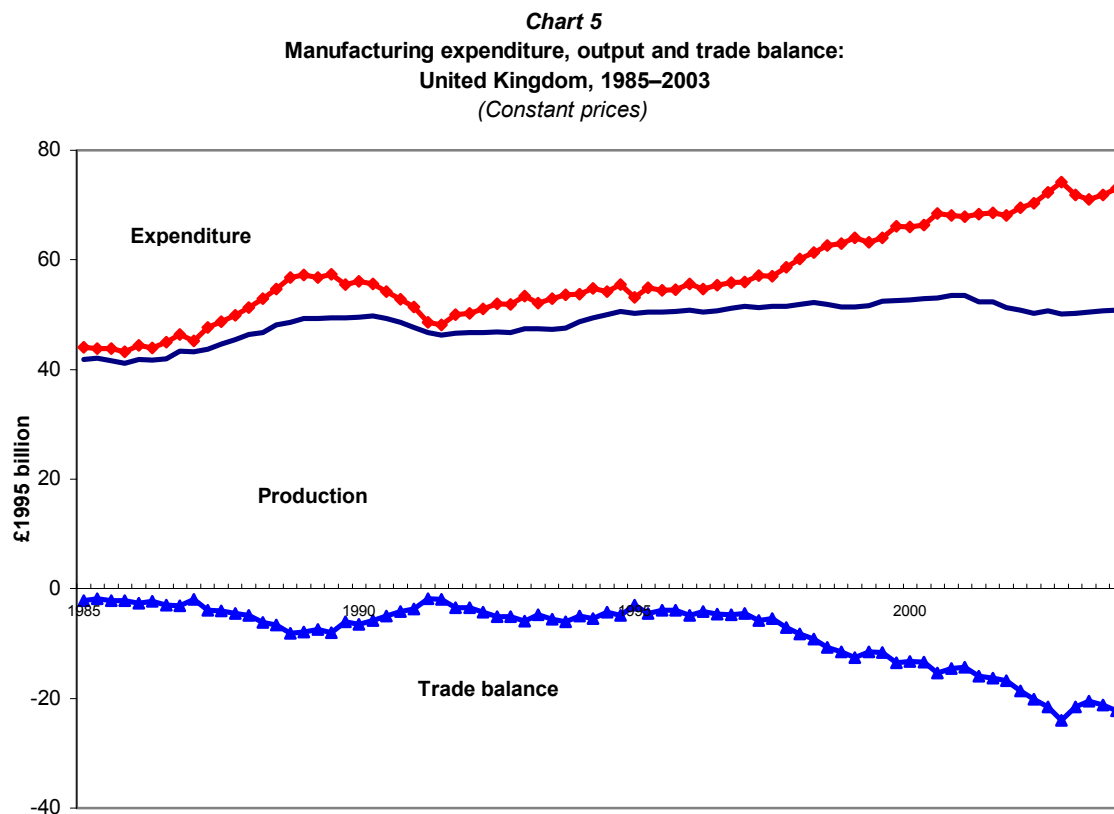
Over the period 1960–2003 as a whole, productivity growth has been similar in the United Kingdom and the United States. It was faster in the United Kingdom during the earlier years and slower later on. Over most of the period, the absolute number of workers employed in United States manufacturing was roughly constant, and sustained productivity growth was matched by rising output. However, things were somewhat different during the recent recession. During this recession, manufacturing production stagnated whilst productivity growth continued at a fast pace, with the result that the absolute number of people employed in this sector fell sharply. This development partly reflects the impact of foreign competition on the United States manufacturing sector which has seen the loss of low-tech jobs to China and some high-tech jobs to India. It may also be partly a cyclical effect that will be reversed if the present output recovery is maintained. The picture is very different in the United Kingdom, where the manufacturing sector has experienced thirty years of almost stagnant output. Combined with rapid productivity growth this has led to a truly dramatic fall in employment. At its peak the United Kingdom manufacturing industry employed more than 8 million workers. Today the figure is around 4.5 million. The contrast between the two economies can be summarized as follows. Until the recent recession, productivity growth in United States manufacturing served mainly to increase output, whereas in the United Kingdom it served mainly to reduce employment. These

<sup>8</sup> The indices shown in chart 4 are derived as follows. Let  $Y_{i,t}$  be the value of a certain variable (output or employment) in country  $i$  in year  $t$ . The logarithmic index  $y_{i,t}$  is equal to  $A_i + \log(Y_{i,t}/Y_{i,1960})$  where  $A_{UK} = 1$  and  $A_{US} = 2$ .

statements refer, of course, to aggregates. The comparative stability of aggregate employment in United States manufacturing conceals the fact that some industries in this sector lost workers whilst others gained workers. Likewise, the near stagnation of manufacturing output in the United Kingdom conceals the fact that output fell in some industries and increased in others. However, this does not invalidate the main point.

### International trade

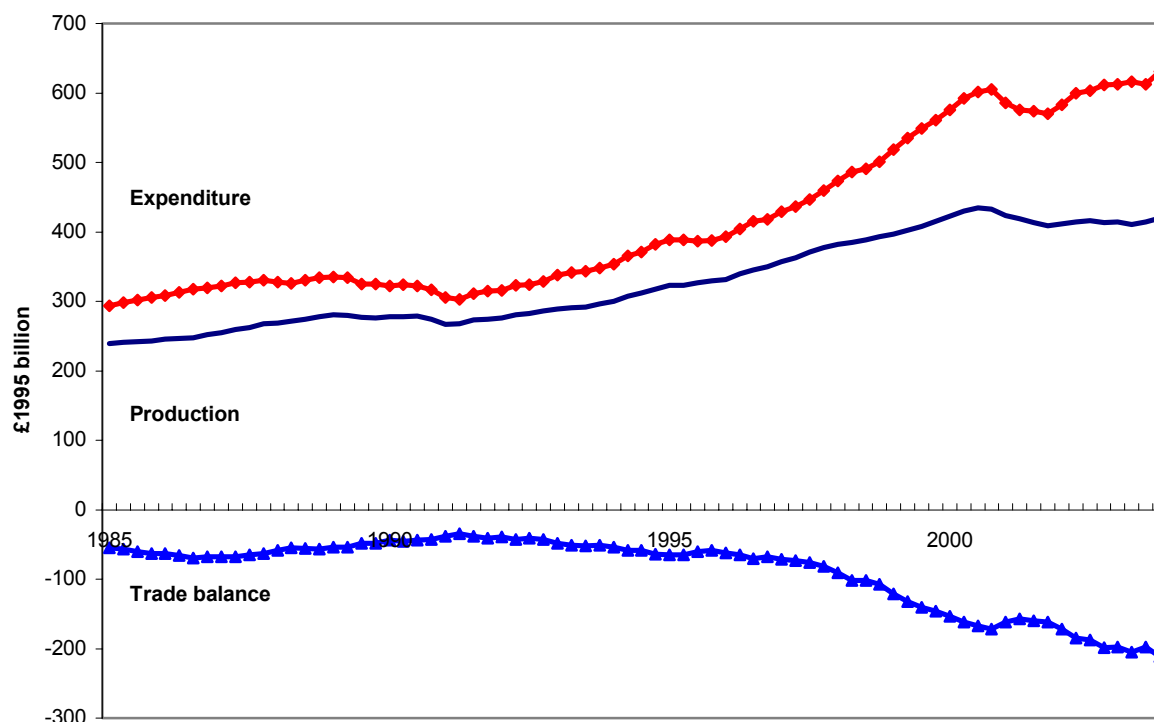
By definition, the manufacturing trade balance is equal to national production of manufactured goods *minus* national expenditure on such goods. Charts 5 and 6 show what has happened to these items in the United Kingdom and the United States. In both of these countries expenditure on manufactures has outstripped national production, with the result that both of them have a growing deficit in their trade balance in manufactures. The production of manufactures has grown much faster in the United States, but this has been surpassed by an even faster growth of expenditure on manufactures.



**Sources:** Production from *Office for National Statistics (ONS)*, index of industrial production; exports and imports from *ONS*, trade volumes, SITC categories; expenditure = production + imports – exports. Benchmark production and expenditure balance from *ONS Supply and Use Tables 1995*.

**Note:** It is assumed that the ratio of gross production to value-added remains unchanged over time.

**Chart 6**  
**Manufacturing expenditure, output and trade balance: United States, 1985–2003**  
 (Constant prices)



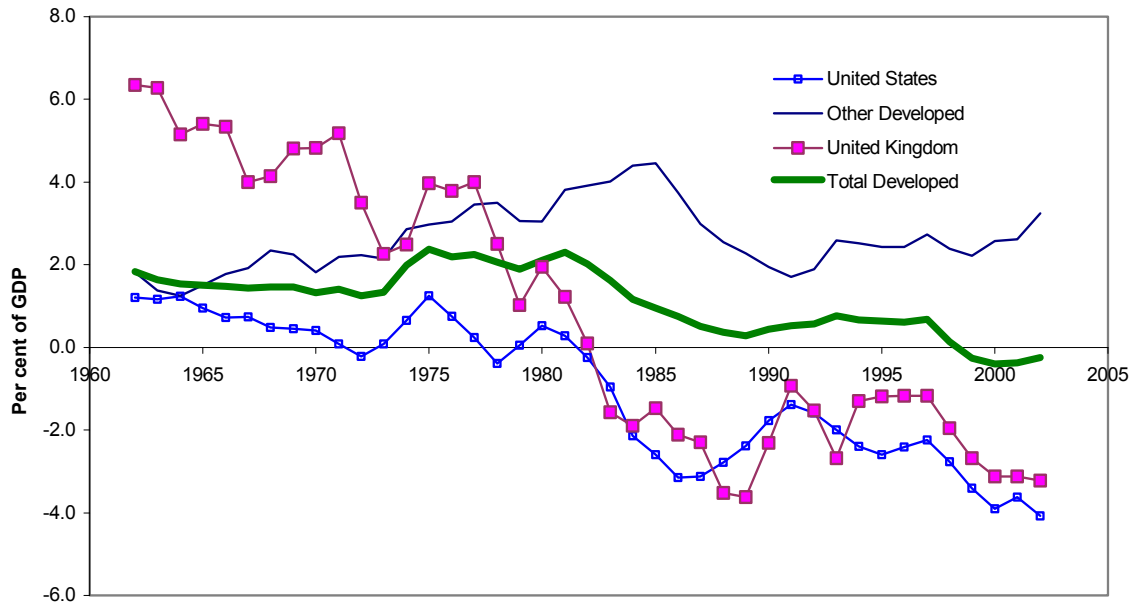
**Sources:** Production from the Bureau of Labour Statistics, exports and imports estimated from Bureau of Economic Analysis, *National Accounts*; expenditure = production + imports – exports. Benchmark production and expenditure balance from 1996 USA *Input-Output Tables*, Bureau of Economic analysis.  
**Note:** See chart 5.

Further information on manufacturing trade is given in charts 7 and 8, which compare the United Kingdom and the United States with other developed economies. Taken as a whole, the manufacturing trade balance of the developed economies has been gradually deteriorating. However, this phenomenon is entirely accounted for by the United States and the United Kingdom. For the past forty years, despite occasional fluctuations, the manufacturing trade balance of other developed economies has remained roughly flat when expressed as a percentage of GDP.

Provided that some other source of revenue can be found, a worsening in the manufacturing trade balance is not important.<sup>9</sup> What matters is the overall balance of payments, which in addition to manufactures includes all current expenditures and receipts for such items as food, materials, fuel, services, transfers, and property income. Any loss of net revenue in manufacturing trade can in principle be made good by additional net revenue from these other items. Indeed, this is just what has happened in the case of the United Kingdom. New sources of overseas income have been developed and net imports of such items as food and raw materials have fallen dramatically as a share of GDP.

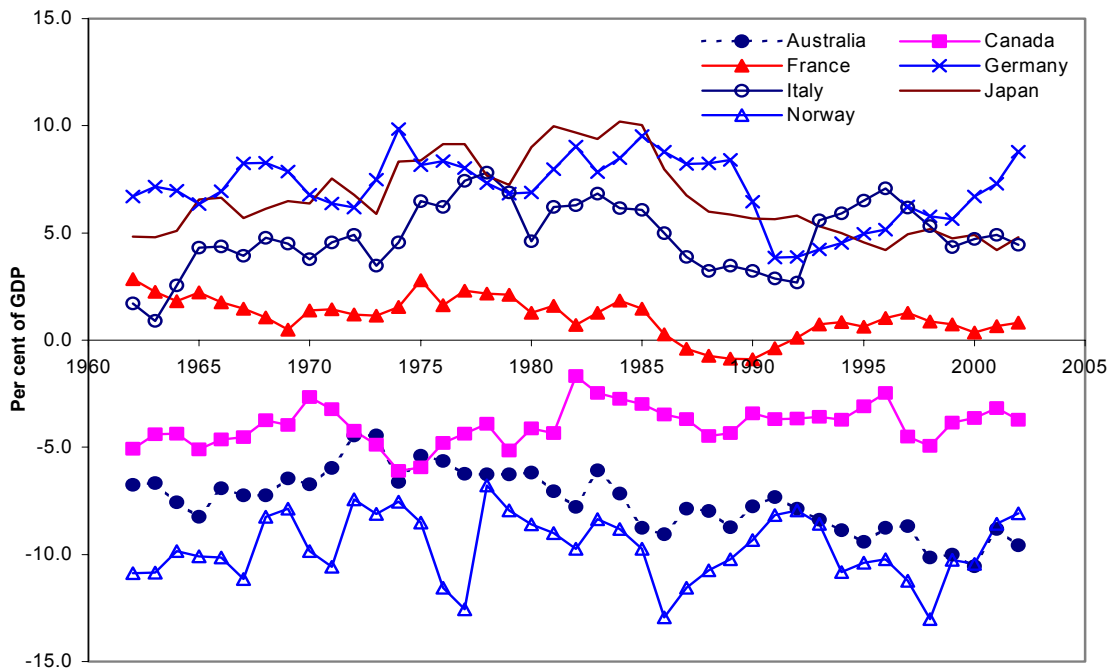
<sup>9</sup> For a good discussion of this issue see Singh (1977).

**Chart 7**  
**Manufacturing trade balances of developed countries**  
*(Per cent of GDP)*



Source: UNCTAD database.

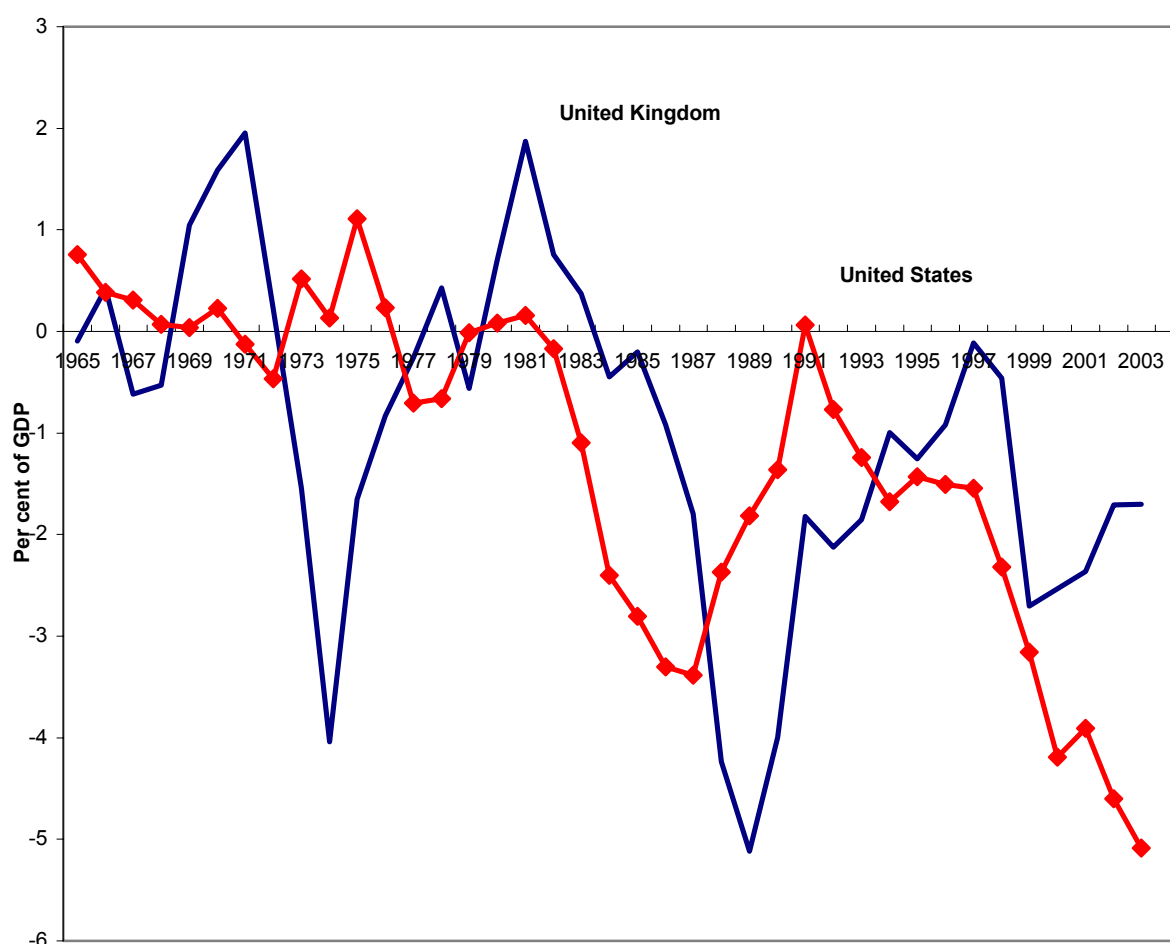
**Chart 8**  
**Manufacturing trade balances of "Other developed" countries**  
*(Per cent of GDP)*



Source: UNCTAD database.

As a result, despite a massive deterioration in manufacturing trade, the United Kingdom overall balance of payments is in moderately good shape. In contrast, the United States has not yet developed new sources of income to offset its worsening trade balance in manufactures. As a result the country now has a large current account deficit. Such a situation is not sustainable over the long run, and sooner or later the gap between expenditures and receipts will have to be reduced. This may come about spontaneously through a devaluation of the United States dollar such as we are currently witnessing. Or it may come about because China and other developing countries open their markets to United States exports and allow United States firms to earn more foreign exchange. The contrast between the United Kingdom and the United States is illustrated in chart 9. In 2003, the United Kingdom had a current account deficit equal to 1.5 per cent of GDP, whereas the United States figure was 5.1 per cent.

**Chart 9**  
**Current account of the balance of payments:**  
**United States and United Kingdom, 1965–2003**  
*(Current prices)*



**Sources:** *United Kingdom Balance of Payments (Pink Book)* and the *United States Bureau of Economic Analysis (International Transactions)*.

**Table 3**  
**United States and United Kingdom compared, 1990–2000**

	<i>Per cent change per annum</i>	
	<i>United States</i>	<i>United Kingdom</i>
<b>Real domestic expenditure</b>		
Goods and services	3.5	3.2
Manufactures	5.4	2.7
<b>Domestic production</b>		
Goods and services	3.2	2.9
Manufactures	3.4	0.6
<b>Employment</b>		
Goods and services	1.2	1.0
Manufactures	-0.2	-2.1
<b>Population</b>	1.2	0.3
<b>Output per employed person</b>		
Goods and services	2.0	1.9
Manufactures	3.6	2.7
<b>Output per head of population</b>		
Goods and services	2.0	2.6
Manufactures	2.2	0.3

**Sources:** Total expenditure and total output of goods and services from the United States and the United Kingdom *National Accounts* data; total employment and population for both countries and manufacturing employment for the United Kingdom from *OECD Labour Force Statistics*; manufacturing output and employment for the United States from the *Bureau of Labour Statistics*; manufacturing expenditure estimated (see charts 5 and 6).

**Notes:** Domestic expenditure = personal consumption + investment + government consumption (C + I + G). Domestic production = GDP. Employment includes self-employment and government employees.

It is interesting to note that the superior balance of payments performance of the United Kingdom has been accompanied by a strong overall economic performance. National output and employment grew almost as fast in the United Kingdom during the 1990s as in the United States, and overall productivity growth was almost identical in the two countries (table 3). The performance of the United Kingdom manufacturing industry was poor, but this was offset by a strong performance in services. Indeed, on a per capita basis the United Kingdom grew significantly faster than the United States over the decade as a whole.

#### **IV. FOCUS ON THE UNITED KINGDOM**

The preceding discussion indicates how the United Kingdom has prospered and maintained a moderately sound balance of payments despite a weak manufacturing sector and a weak manufacturing trade performance. This is an unusual combination that is worth exploring in more depth. To round off the paper we shall therefore examine the country's balance of payments in more detail.

The United Kingdom emerged from the Second World War in a difficult economic situation. Much of its overseas wealth had been lost in the war and revenue from this source was severely depleted. The price of imported food and raw materials was astronomical, and a huge manufacturing trade surplus was required to pay for vital imports. In 1950, the United Kingdom manufacturing trade surplus was 11 per cent of GDP – more than three times its pre-war level, but even this was not sufficient to cover the even larger deficit on other items such as food and materials. The United Kingdom was still one of the great industrial nations of the world, but its situation seemed precarious. Moreover, international

competition was about to intensify as the war-torn economies of Continental Europe recovered and new competitors appeared in Asia.

In the event, things turned out quite well. The United Kingdom economy grew quite fast by its own historical standards, living standards rose, and the country did not go bankrupt. Even so, there was nagging unease as the country experienced periodic currency crises and its manufacturing trade surplus steadily shrank. Following a seminal article by Ajit Singh (1977), there was an intense debate, about why the manufacturing trade surplus had been shrinking and what this trend signified. Some saw it as a pathological development that could only end in disaster. Others, such as Rowthorn and Wells (1987), argued that it reflected long-run structural changes that were altering the shape of the United Kingdom economy and its relations with the rest of the world.<sup>10</sup> In the immediate post-war period, the country had needed a huge manufacturing trade surplus because there was no other way to pay for its large and expensive imports of food and raw materials. Now the United Kingdom was less reliant on these items and their real price had fallen dramatically. Moreover, there were new sources of revenue, such North Sea Oil, services and income from overseas investments, which could be used to pay for imported food and raw materials. As a result, the United Kingdom's previously huge deficit on non-manufacturing trade had disappeared and hence there was no longer the need to finance this deficit by earning a huge surplus on manufacturing trade.

This view is now widely accepted. The United Kingdom manufacturing trade is now in deficit and no one seems to be very worried about it. This is partly because the importance of service exports is now widely recognized. It is also because the growth of international capital markets has made it much easier to borrow money and finance deficits than used to be case. Moreover, having shrunk to only one-seventh of direct employment, manufacturing has now lost its former hold on the public imagination. Although few would write off manufacturing completely, many now believe it to be of secondary importance compared to knowledge-based services such as finance or consultancy. This, in our view, is a mistake. Rowthorn and Wells were right to argue that the United Kingdom economy had become overspecialized by 1950, and that a substantial reorientation away from manufacturing towards other activities was inevitable. However, things may have gone too far. Too much manufacturing capacity may have been shed, and the failure to develop a more dynamic manufacturing sector may eventually turn out to have serious consequences for the balance of payments and the overall prosperity of the country. Having been over-specialized in one direction, the United Kingdom may be in danger of becoming over-specialized in another. As the example of the United States shows, it is wrong to believe that manufacturing belongs in the past and is no longer important in a modern economy.

### **The balance of payments**

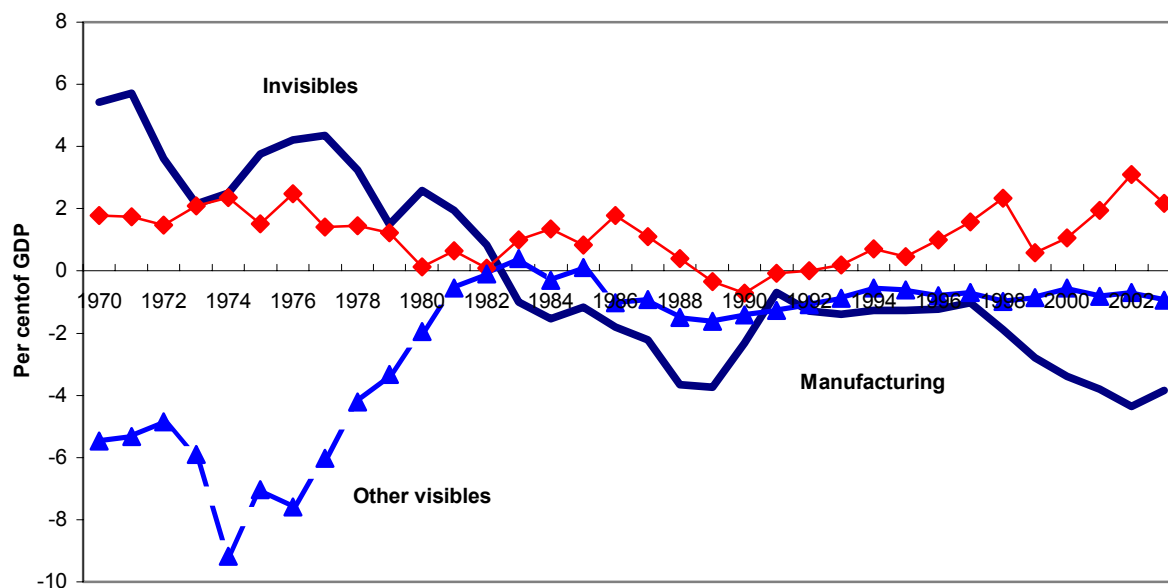
The overall payments position of a country is normally measured by the so-called current account. In addition to manufactured goods, this account includes "other visibles", such as food, fuels and raw materials, together with "invisibles", such as services, income from overseas investments, migrants' remittances and inter-governmental transfers. Chart 10 gives a breakdown of the United Kingdom current account into these three major components. After the turbulence associated with the oil crises of the 1970s and their aftermath, the overall picture is now one of comparative stability. Even so,

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<sup>10</sup> See Rowthorn and Wells (1987).

recent years do exhibit some kind of pattern. The trade balance on “other invisibles” has been very small and stable over the past decade, due to the fact that the United Kingdom is now self-sufficient in oil, and that food and raw material imports are nowadays of secondary importance. Meanwhile, the deficit in manufacturing trade has been getting worse, but this has been offset by improvements on the invisible side of the account.

**Chart 10**  
**Components of the United Kingdom balance of payments, 1970–2003**  
*(Current prices)*



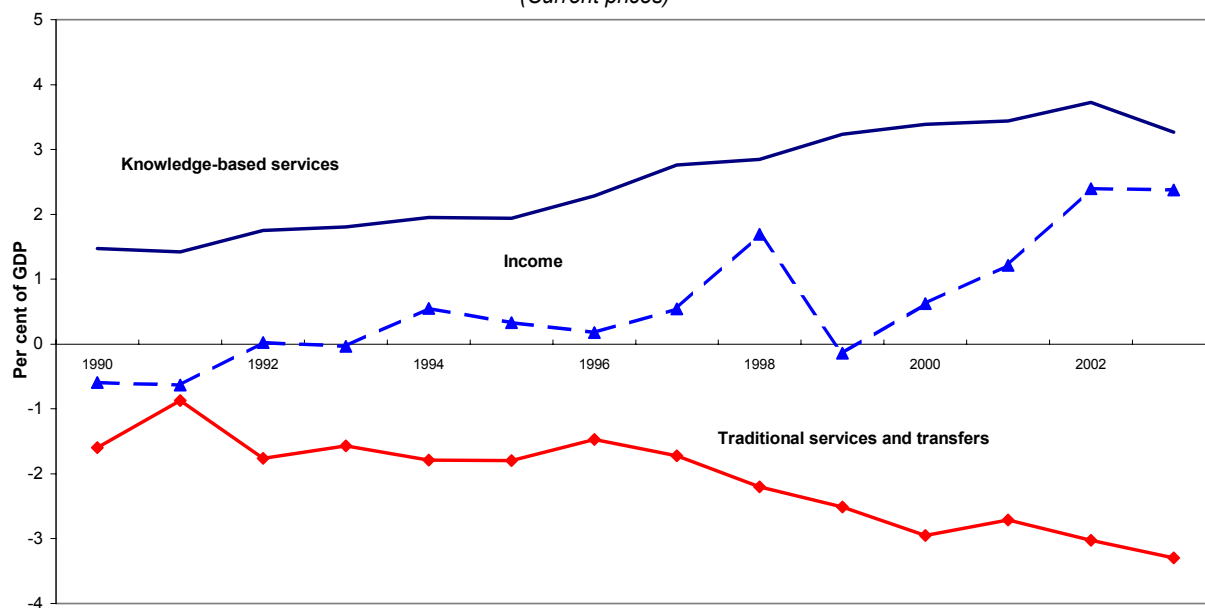
Source: *United Kingdom Balance of Payments (Pink Book)*.

The overall improvement in invisibles conceals some widely divergent trends. As can be seen from chart 11, there is a large and growing deficit in transfers and traditional services such as transport and travel. The main factor behind this trend, as shown in table 4, has been an explosion in foreign travel by British tourists, driven by a combination of rising incomes, a strong pound and cheap travel. On the other hand, there has been a dramatic growth in receipts from knowledge-based services, such as banking, finance, consultancy and other business services. Within the space of a decade, earnings from this source have more than doubled their share of GDP. There has also been a rapid growth in income from overseas investments. As table 4 shows, this growth is mainly due to large increases in portfolio income and the retained earnings of the overseas subsidiaries of the United Kingdom companies. It is conventional to include all retained earnings as a credit item in the balance of payments. Wynne Godley (2003) has criticized this practice on the grounds that it exaggerates both the level and growth of what can legitimately be regarded as United Kingdom investment income.<sup>11</sup> In 2003, overseas investments and knowledge-based services between them generated a net income for the United Kingdom equal to nearly 6 per cent of GDP.

<sup>11</sup> Some of the retained earnings of overseas subsidiaries belong indirectly to overseas shareholders in the United Kingdom parent companies. This portion of retained earnings should really be classified as income for the countries in which these shareholders reside. Conversely, part of the retained earnings of foreign subsidiaries operating in the United Kingdom should be recorded as a credit item for the United Kingdom, since British residents hold shares in their foreign parent companies. The net effect of this convention is to exaggerate the level and growth of the United Kingdom surplus on the overseas income account.

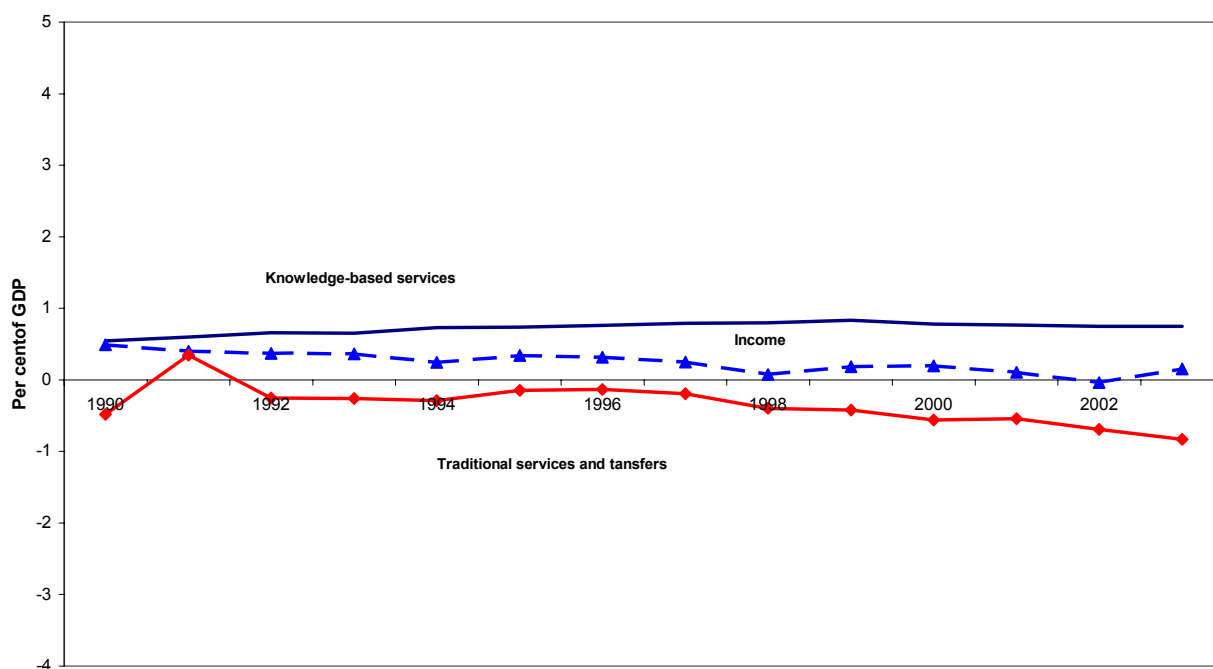


**Chart 11**  
**Invisibles components of the United Kingdom balance of payments, 1990–2003**  
 (Current prices)



Source: United Kingdom Balance of Payments (Pink Book).

**Chart 12**  
**Invisibles components of the United States balance of payments, 1990–2003**  
 (Current prices)



Source: United States Bureau of Economic Analysis (International Transactions).

**Table 4**  
**Components of services and property income in the United Kingdom balance of payments**

<i>Balances</i>	<i>£ million</i>		<i>Per cent of GDP</i>		<i>Change</i>
	<i>1990</i>	<i>2003</i>	<i>1990</i>	<i>2003</i>	
Knowledge-based services	7397	31854	1.5	3.3	1.8
<i>of which:</i>					
Insurance*	585	5846	0.1	0.6	0.5
Financial services	3333	9967	0.7	1.0	0.3
Other business services*	3520	14006	0.7	1.4	0.7
Computers and information*	301	2395	0.1	0.3	0.2
Other services*	13	1261	0	0.1	0.1
Traditional services and transfers	-7992	-32189	-1.6	-3.3	-1.7
<i>of which:</i>					
Transport	-706	-5255	-0.1	-0.5	-0.4
Travel	-1565	-15770	-0.3	-1.6	-1.3
Government	-789	-740	-0.2	-0.1	0.1
Transfers	-4932	-10423	-1.0	-1.1	-0.1
Income	-2979	23215	-0.6	2.4	3.0
<i>of which:</i>					
Retained earnings	8328	31807	1.7	3.3	1.6
Dividends and other income	-11307	-8422	-2.3	-0.9	1.4

*Source:* United Kingdom Balance of Payments (Pink Book).

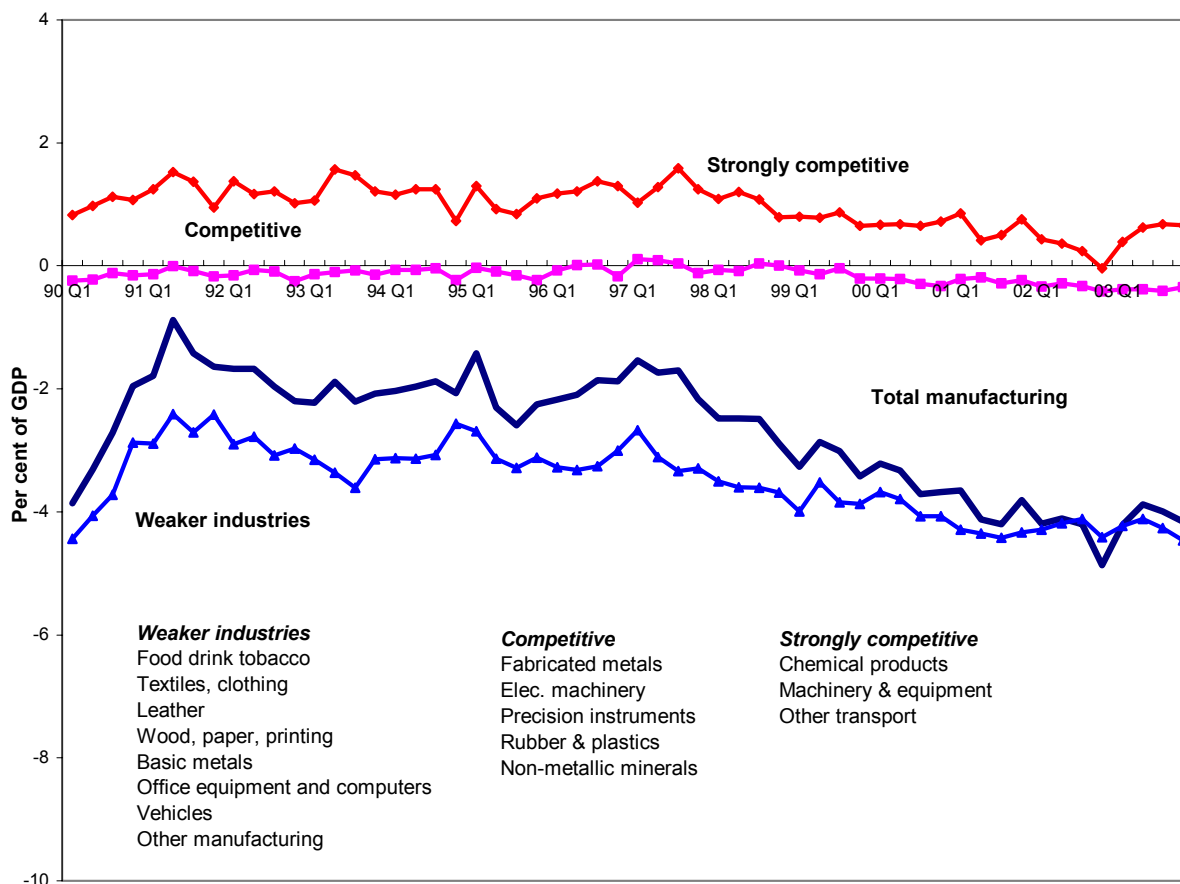
\* Data from 1991.

For comparison, chart 12 provides information about the major invisible items in the United States balance of payments. The most striking feature is how small these items are in relation to GDP and how little they have altered. Whereas the United Kingdom has experienced rapid growth in its net income from knowledge-based services and overseas investments, these items have either stagnated or declined in the United States in recent years. In the case of transfers and traditional services, the balance is deteriorating in both countries, but the deficit is much larger in the United Kingdom and the pace of decline is much faster. These contrasts indicate how much restructuring there has been in the United Kingdom external balance and how little there has been in the United States.

### **Strong and weak industries in United Kingdom manufacturing**

Chart 13 classifies manufacturing industries into three groups according to their trade performance: weaker, competitive, and strongly competitive. Weaker industries are defined as those that have a negative and worsening trade balance; strongly competitive industries have a positive and improving trade balance, and the rest are classified as competitive. The list of strongly competitive industries is small and comprises chemicals and pharmaceuticals, machinery and equipment, and other transport (aerospace and weapons); and the rest are classified as competitive. The list of weaker industries is large and includes such obvious ones as clothing or leather where domestic producers are suffering severe competition from low wage imports. It also includes less obvious ones such as office equipment and computers or vehicles.

**Chart 13**  
**United Kingdom trade performance - manufacturing sectors, 1990–2003**  
*(Current prices)*



Source: Office for National Statistics, Trade by Industry, MQ10.

In most manufacturing industries, imports and exports are increasing simultaneously, both absolutely and in relation to national production. In the strongest sectors, such as chemicals and pharmaceuticals or other transport, exports exceed imports and the balance is stable or improving. In weaker industries, the opposite is true. In some cases, total exports are increasing, but they are being outstripped by mushrooming imports. This is most obvious in office equipment and computers, where exports rose by 80 per cent between 1995 and 2001, but imports grew by 270 per cent. The picture is similar, but less dramatic in wood, paper and printing, vehicles and the residual group “other manufacturing”. The fact that exports are increasing in such supposedly weak industries indicates that they still retain some areas of strength. This is confirmed by the fact that, in most of the weaker industries just listed, national production has been increasing. This should make us cautious about writing off such industries simply because their trade balance is negative and getting worse. However, there are a few manufacturing industries, such as textiles, leather and clothing, or basic metals, where both exports and production are falling. This is evidence of long-term decline, although even in these industries there must be areas of actual or potential strength, and they should not be written off prematurely.

## The future

Prediction is always hazardous. About a decade or more ago, a group of us in Cambridge made a study of the United Kingdom balance of payments and explored various scenarios for the future.<sup>12</sup> We predicted fairly accurately the deterioration in the manufacturing trade balance, but it is now clear that we were too pessimistic about prospects for invisible earnings, above all income from overseas investments. As a result, our predictions for the overall balance of payments were unduly negative. After this experience, we are a bit reluctant to make predictions. Anything we shall now say, therefore, comes with a health warning.

An area where prediction is particularly difficult is the balance of payments. This balance is the difference between two very large quantities (exports and imports) and quite small proportionate changes in these items can cause the balance to swing sharply from surplus to deficit or vice versa. However, it is fair to say that the present balance of payments situation is a cause for modest concern. The current account deficit is now around 2 per cent of GDP. In itself, this is not a very large figure and could be financed for some years by international borrowing. Of more concern is the danger that things may get worse. We have identified certain areas where trade performance is deteriorating, such as the weaker manufacturing industries and traditional services – especially tourism. Moreover, the production of North Sea Oil has reached a plateau and is expected to begin a long-term decline.<sup>13</sup> To offset continued decline in these areas will require continued improvement in other sectors, such as knowledge-based services, income from overseas investment, or the more competitive manufacturing industries. Such improvements cannot be taken for granted. Indeed, in some cases there could easily be a reversal of fortune. For example, income from overseas investments is a volatile item which, historically, has swung several times from deficit to surplus and back again. It is not clear that such oscillations have come to an end, and the present surplus could unexpectedly shrink or disappear altogether. Moreover, as mentioned above, this surplus is already smaller than it appears because it is inflated by misleading accounting conventions. The trade surplus on knowledge-based services looks set to continue rising, but this may not be large enough to compensate for serious failings elsewhere in the balance of payments.

Thus, although the present deficit is not a cause for immediate alarm, there are some worrying features in the balance of payments. The situation is precarious and could easily get much worse. The ideal would be to eliminate the present current account deficit altogether, but short of this ideal it would still be a valuable achievement to stabilize the balance of payments and prevent a further worsening of our trade performance. This may be difficult to achieve without some revival in the fortunes of the manufacturing sector. Manufacturing still accounts for almost 60 per cent of the United Kingdom total exports of goods and services. Manufactured exports are 5 times larger than total earnings from the export of all knowledge-based services combined. Knowledge-based services are a vital and dynamic component of our exports, but they cannot be expected to compensate for widespread failings in the manufacturing sector. For the foreseeable future, manufactures will continue to play an important role in our foreign trade, and the health of our balance of payments will in large measure depend on what happens to manufacturing. For reasons of economic security, and regional balance, the United Kingdom needs a stronger manufacturing sector. How this might be achieved is a subject for another paper.

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<sup>12</sup> Coutts and Godley (1990), Cosh, Hughes and Rowthorn (1994) and Cosh, Coutts and Hughes (1996).

<sup>13</sup> *North Sea Regional Country Analysis Brief*, United Kingdom Department of Energy, June 2003.

## V. CONCLUSION

This paper has revisited the long-standing debate on the links between foreign trade and de-industrialization. The bulk of the paper offers an empirical breakdown of the forces behind de-industrialization in advanced industrial economies, including some of the East Asian newly industrializing economies whose evolving employment pattern confirms previous findings, such as productivity growth and shifting patterns of demand, that internal forces have been driving this process. However, the analysis does have broader relevance for policy makers, including in developing countries. In the first place, this research confirms that balance of payments analysis remains of relevance to the adjustment challenges of a more interdependent global economy. The tendency to downplay this constraint has been costly for many developing countries. Secondly, the fact that North-South trade cannot be ignored in the debate on de-industrialization haunts the debate on how to better manage a more integrated global economy. The paper estimates that 5 million manufacturing jobs have been lost to exports in the South over the 10 years between 1992 and 2002. This is not a huge figure compared to total employment of 400 million. Moreover, these numbers are not big by historical standards and they suggest that policies other than those linked to trade matter much more in creating jobs. This is clearly confirmed by job creation in the United States in the 1990s against the backdrop of a deteriorating balance of trade and by Taiwan Province of China which experienced the largest hit from North-South trade in the 1990s, without provoking the kind of outcry seen elsewhere. Finally, manufacturing still matters to economic performance even at the highest levels of economic development. Recent evidence showing premature de-industrialization in Latin America points to serious mismanagement of their closer integration into the global economy since the debt crisis. The long-term consequence of this will need to be addressed by policy makers from that region.

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