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# Inflation and growth in a service economy

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*This article sets out the initial findings of a project team set up by the Bank to examine the behaviour of the service sector, in the light of the increasingly important role that services play in the UK economy, and so in achieving the Government's inflation target. It presents a series of stylised facts about the service sector between 1970–97, and notes areas for further work.*

## Introduction

Late in 1997, the Bank set up a project team<sup>(1)</sup> on the service sector, which aimed to develop a fuller understanding of how the sector operates. The project has drawn on work by others, both from this country and abroad. It tries to reach comprehensive and aggregate conclusions where possible, while still recognising the critical diversity within the huge UK service sector. Through the Bank's network of regional Agents, the project team has also benefited from discussions with many service businesses. These initial findings are primarily descriptive and backward-looking, typically covering the period 1970–97, or as much of it as the relevant data series allow.<sup>(2)</sup> They quantify the growing role of services in the UK economy, and identify the key differences revealed by the data between the behaviour of services and the rest of the economy.

A key feature of the UK economy during the current recovery, particularly over the past 18 months, has been the difference in performance between the buoyant service sector and the slowing manufacturing sector. Some commentators have called this a 'two-speed' economy. Since the start of the recovery in 1992, the rate of output growth in the service sector has been more than double that of manufacturing; more than 80% of the rise in UK employment has been generated by service industries; and in 1997, the UK economy recorded its first current account surplus for twelve years, partly accounted for by a record surplus in the trade of services. For most of this period, the inflation rate of services has been higher than that of goods.

These trends are not new, nor are they unique to the United Kingdom. The share of the service sector in both production and employment has been growing for at least two decades in most OECD countries. Services now account for two thirds of UK GDP, and three quarters of employees are engaged in providing services. It is in this sense that the United Kingdom can be regarded as a service economy. This predominance of service industries raises important issues for policy-makers.

First, it is unclear whether the economic characteristics of services are similar enough to those of goods for conventional macroeconomic constructs (such as the output gap) to be operationally useful for policy-makers. And if it is harder to measure quality or productivity improvements in services than in goods, economy-wide measures of growth and inflation will become increasingly distorted. This will complicate the policy-makers' job.

Second, a policy decision (say, to change interest rates) may affect the economy differently when most producers are service companies. Service producers may differ from other sectors of the economy in their export orientation and capital intensity, and so in their sensitivity to changes in exchange rates and interest rates. This may affect the optimal policy choice.

Third, some of the new service industries may have special economic properties that do not fit well with the assumptions of conventional economic models. For example, telephony and computer software production have high initial costs, but very low marginal costs. As a result, pricing strategies may be complex, and component services are sometimes embedded in customised packages that can obscure the price actually paid or the service actually bought. IT-based services are already a major wealth-producer and job-creator (and, currently, an area of skill shortages), and are likely to be one of the fastest-growing parts of the economy in the next decade. A better understanding of their role in UK growth and inflation is needed.

The structure of the article is as follows. Each section begins with bullet points that summarise the key stylised facts from that section. The second section compares service sector growth in the United Kingdom with other countries, and considers its cyclical nature. The third section gives estimates of the size of the linkages between the service sector and the rest of the economy. The fourth and fifth sections discuss service sector investment, employment

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(1) The other members of the project team were Alan Beattie, Andrew Hauser, Caroline Webb and Simon Whitaker; all contributed substantially to the work on which this article is based.

(2) The analysis is based wherever possible on the latest data from the Office for National Statistics (ONS), which incorporate the changes made to the National Accounts in September 1998. Details of these changes are given in the article on pages 361–67 and in the November 1998 *Inflation Report*.

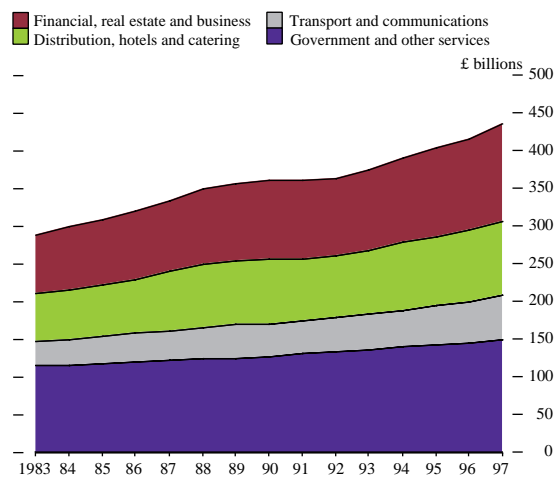
and productivity. The sixth section covers international trade in services. The seventh section reviews the share of services in consumption and the behaviour of service sector prices in RPIX inflation,<sup>(1)</sup> and the final section notes a number of issues that could be pursued in further work.

### Service sector output growth and cyclicity

- *Although the share of service sector output has grown in most developed economies in the past 15 years, the increase has been more pronounced in the United Kingdom.*
- *Production of marketed services has expanded strongly for more than 25 years.*
- *The degree of volatility in service sector output varies across industries, and depends on the source of shocks. But there is no clear evidence to support the hypothesis that as the UK economy becomes more service-oriented, the business cycle will become smoother.*

The ONS’s broadest definition of service sector output corresponds to the non-tangible, non-commodity notion—everything except agriculture, mining, construction and manufacturing. Within this, the four broad categories of services set out in the national accounts are: Distribution, hotels and catering (DHC); Transport and communications (T&C); Finance, real estate and business services (FRB); and government and other services (GOV).<sup>(2)</sup> Chart 1 gives an idea of the relative size of each of the sectors. The first three categories are typically referred to as marketed services, and the fourth category is predominantly made up of non-marketed government services such as health, education and defence, though it includes a small amount of marketed services.

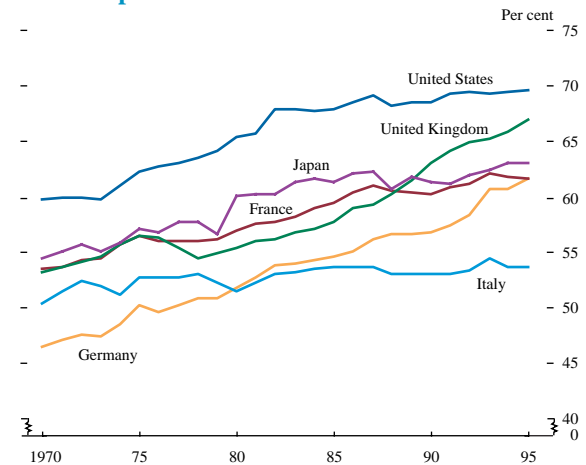
**Chart 1**  
Real service sector output



In 1970, service sector industries supplied 53% of GDP (at constant 1995 prices); in 1995, this had grown to 67%. The

share of marketed services in GDP grew from 42% in 1970 to more than 55% in 1995. As Chart 2 illustrates, this gradual shift in output share was not unique to the United Kingdom, but occurred in most of the major industrialised economies. However, the United Kingdom now has the second-highest relative share among the G7 countries (behind the United States), and in the past 15 years, the share of services’ output has grown more rapidly in the United Kingdom than in the United States, where it appears to have levelled off at around 70%.

**Chart 2**  
Service sector output as a share of GDP in constant prices



Source: OECD, 1996 International Service Statistics.

Services have grown much more rapidly than the rest of the UK economy throughout the period 1970–97: the average yearly rates of growth for the service and manufacturing sectors were 2.6% and 0.7% respectively. Marketed services have grown at a yearly rate of around 3% during the same period. Growth has been particularly rapid in financial services, business services, real estate activities, education and health services, and communications, including entirely new industries such as computer software and cellular telephony.

The importance of services may also be gauged by expenditure on them as a share of GDP. The expenditure share is measured by the ratio of consumption expenditure on services (both private and governmental) plus the net trade balance in services to GDP at constant 1995 market prices. The expenditure share has changed much less than the output share (see Chart 3). From 1970–97, it varies between 48% and 52%. From 1970–92, there was a slow upward trend, but since 1992 the share has fallen. The main reason is offsetting movements in private and government consumption. Consumption of services is rising as a proportion of private consumption, and the latter is rising as a proportion of GDP. But consumption of government services has been falling as a proportion of GDP since 1981.

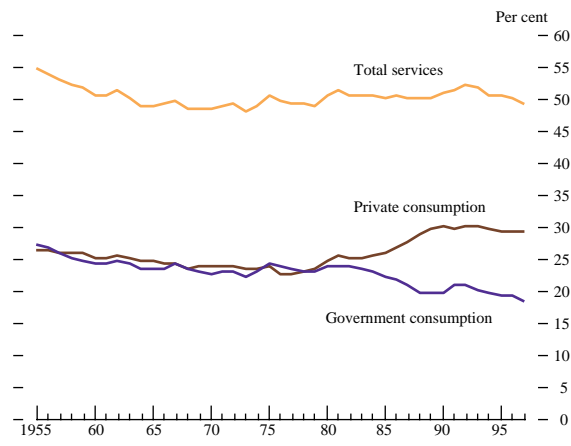
The output share and the expenditure share differ by the extent to which service industries produce for intermediate

(1) Inflation measured by the retail price index excluding mortgage interest payments.

(2) The utilities—gas, electricity and water—are placed in the production sector along with manufacturing, mining and construction, although consumer expenditure on utilities is counted as services.

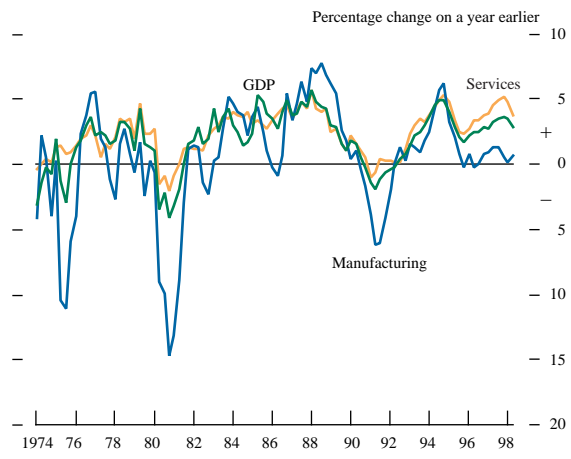
output rather than for final demand. The relatively modest rise in the expenditure share is explained by the fact that much of the expansion of services output has been in business services and, to a lesser extent, in distribution.

**Chart 3**  
Expenditure on services as a proportion of GDP (1995 prices)



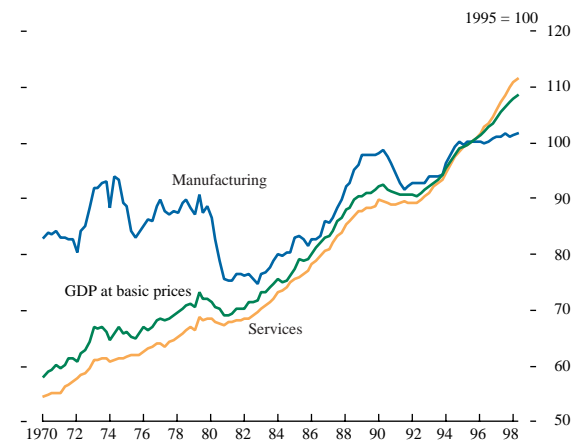
A key issue of debate at present is whether the gradual shift from manufacturing towards services will smooth the UK business cycle: whether expansions will become longer, and recessions become shorter and shallower. This debate typically highlights differences in stock behaviour, exposure to international demand fluctuations and capital intensities between the two sectors. Charts 4 and 5 show that services were considerably less cyclical than manufacturing during the two most recent complete cycles (1973 Q3 to 1980 Q1, and 1980 Q2 to 1990 Q4), with less-pronounced peaks and

**Chart 4**  
Annual growth in output



troughs, as well as fewer cycles. The manufacturing sector went into recession almost two years before the economy as a whole followed in 1980, whereas the service sector continued to expand in the early 1970s and contracted considerably less at the end of the decade. But it is important to note the specific factors behind the 1970s

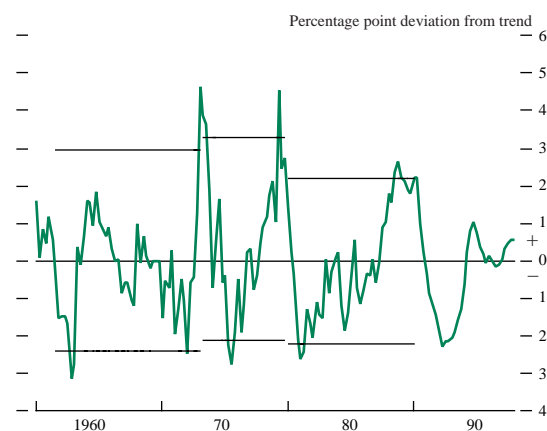
**Chart 5**  
Levels of output



contractions—in particular, the oil shocks and real sterling exchange rate appreciation, which affected manufacturing more significantly and persistently than services, and led to a structural as well as a cyclical response.

A more systematic statistical analysis of the entire post-1960 period<sup>(1)</sup> suggests that the 1970s contractions in total output may have been atypical. Chart 6 plots the deviation of aggregate output, as measured by GDP in 1995 basic prices, from its trend during the most recent three complete cycles. There is no evidence to suggest that the business cycle has progressively become smoother, or that expansions have become longer and recessions shorter since 1960. This is consistent with findings in the United States.<sup>(2)</sup> Moreover, during the 1960s and the most recent cycle, the service and manufacturing cycles have been in phase, entering recession at virtually the same time, and with the depth and duration of both cycles much more alike than in the 1970s. But the performance of services and manufacturing has differed again during the most recent recovery, with the service sector benefiting from

**Chart 6**  
Volatility pattern in the business cycle



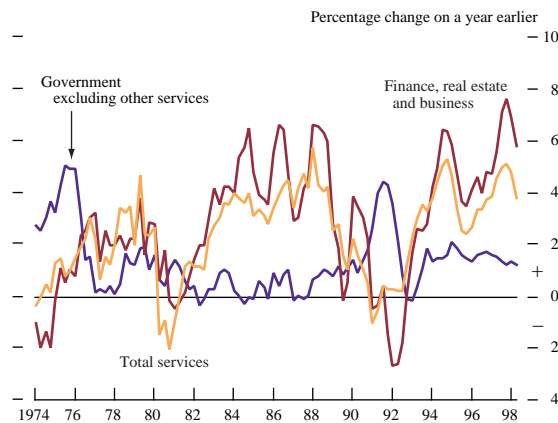
Note: Volatility is measured as a percentage point deviation of GDP at basic prices from its Hodrick-Prescott trend (with smoothing parameter 1600). Bands are 90% regions for the past three business cycles: 1961 Q4 to 1973 Q2, 1973 Q3 to 1980 Q1, and 1980 Q2 to 1990 Q4.

(1) The period when the share of services in the UK economy increased; from 1945–60, its share was fairly stable at 47%.  
(2) 'Cyclical Implications of the Declining Manufacturing Employment Share', Andrew Filardo, *Economic Review*, 1997 Q2.

strong domestic demand, while the performance of manufacturing has been constrained by sterling's sharp appreciation.

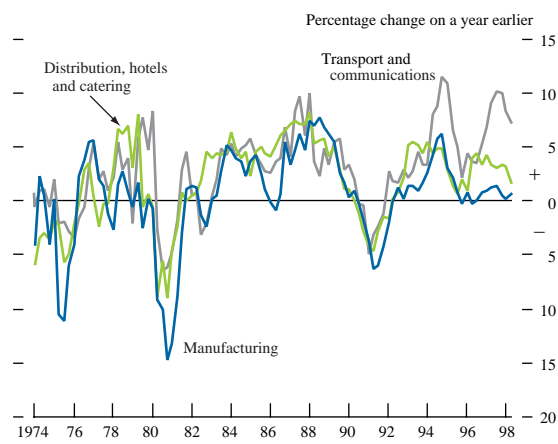
Within the service sector, different industries have differing cyclical patterns (see Charts 7 and 8). Both the T&C and DHC sectors appear as cyclical as manufacturing. There is some evidence to suggest that government services are, if anything, counter-cyclical. Cycles in FRB have been swamped by its rapid expansion, due to a sequence of structural changes. FRB services entered recession in 1991 for the first time in more than 20 years.

**Chart 7**  
Annual growth in output



Note: For 1974–82, Finance, real estate and business output is estimated.

**Chart 8**  
Annual growth in output



### Linkages and multipliers

- *The service sector is becoming a more important source of inputs to non service sector production.*
- *A unit increase in demand for either service sector or manufacturing output affects whole-economy output to the same extent.*

Most sectors within the economy are closely interconnected, but use of ONS input/output (I/O) tables allows us to disentangle the connections. This analysis highlights the growing importance of services as inputs to production. Services used as inputs to production of both goods and services increased substantially between 1984–90. For example, the proportion of inputs required by the non service sectors from the service sector increased by around 15% in the six-year period. Although some of this change will reflect the sectoral reclassification of activities resulting from outsourcing (many manufacturers are now purchasing services that they once produced themselves), the change is probably also associated with efficiency gains and increases in requirements for a wide range of services, such as communications, finance, insurance, and real estate.

The 1990 I/O tables also estimate the direct and indirect result on the economy of a unit change in the final demand for a commodity—the output multiplier (see Table A). This suggests that if the direct demand for marketed service sector output increased by 100 units, overall economic output would increase by 174 units. This is only marginally less than the impact of a similar increase in demand for manufactured goods.<sup>(1)</sup>

**Table A**  
Direct and indirect impact on economy of a 100-unit change in final demand for a particular sector's commodity

| Commodity             | Final impact on economy (units) |
|-----------------------|---------------------------------|
| Marketed services     | 174                             |
| Non-marketed services | 126                             |
| Manufacturing         | 180                             |
| Primary sectors       | 197                             |

Source: Calculated from 1990 I/O tables.

### Service sector investment

- *Investment intensity of the private service sector (the investment-output ratio) is rising, and is now above that of manufacturing. So the capital/output ratio is catching up with that of manufacturing.<sup>(2)</sup>*
- *Across the OECD, both the capital/labour ratio and total factor productivity growth have been rising more slowly in private services than in manufacturing.*

The private service sector accounts for a growing share of whole-economy investment. This could simply reflect its larger share in the economy. But the private service sector is also investing a greater share of its output—its investment intensity is rising (see Chart 9).<sup>(3)</sup>

The rising trend in investment intensity has been accounted for by the sectors of DHC and FRB services (see Chart 10). In the financial sector, there is an increasing reliance on

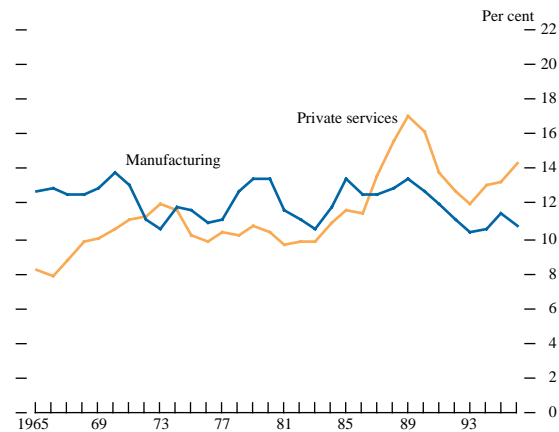
(1) The Leontief inverse provides the link between commodity output and final demand. An increase in demand for commodity  $i$  of  $x$  units would lead to a direct increase of  $x$  units in the output of commodity  $i$ . However, commodities  $j$  and  $k$  may also be needed in the production of commodity  $i$ , which may in turn require a certain amount of commodity  $i$ ,  $j$  and  $k$  to produce it. So there will be a further indirect increase in the demand for commodity  $i$ .

(2) Private service sector investment excludes investment in dwellings and investment by government.

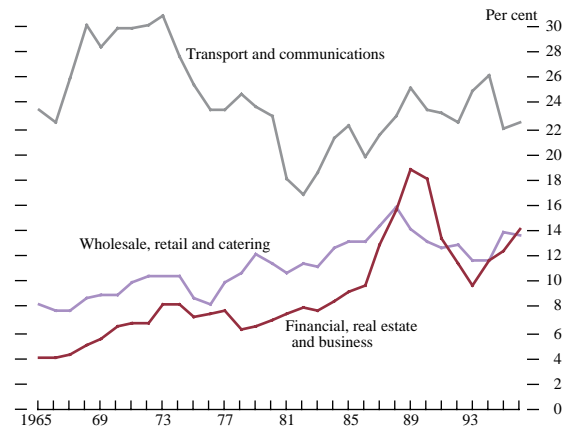
(3) Investment intensities in Charts 9 and 10 and the capital/output ratios in Chart 11 are calculated from unrevised ONS data, since full back-data on the revised basis are not yet available. This is not expected to affect the conclusions.

information technology (IT) in the provision of services. IT is also becoming more important in the DHC sector, as a complement to 'just-in-time' production processes. The investment intensity of the T&C sector is currently lower than in the late 1960s, when much infrastructure was initially set up, but has also been on a rising trend since the early 1980s.

**Chart 9**  
Investment intensity (I/Y)



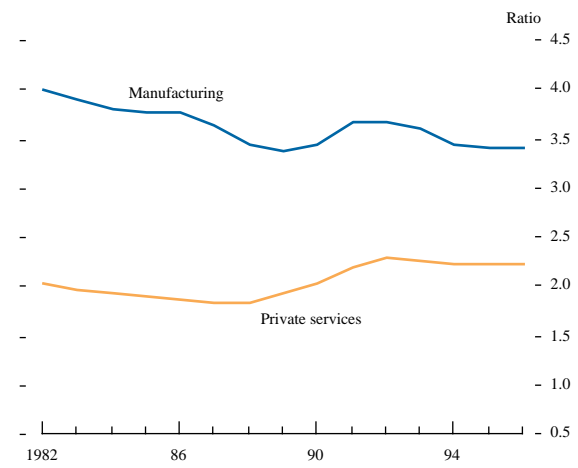
**Chart 10**  
Investment intensity (I/Y)



The capital/output ratio of the manufacturing sector has been higher than in the private service sector (see Chart 11). The capital/labour ratio is also much higher and has risen more rapidly in the manufacturing sector than in the private service sector, as manufacturing has to date been more amenable to automation. Rising capital/labour ratios have been associated with technological change; this has led to positive total factor productivity growth in manufacturing in the United Kingdom and in other OECD economies. Total factor productivity growth has been much slower in the private service sector.<sup>(1)</sup>

The increasing importance of the service sector has implications for measuring the incentives to invest in fixed capital. One measure is the ratio of the market value of a firm to the replacement cost of its capital stock, namely 'Tobin's  $q$ '. When this ratio exceeds one (ignoring tax effects), the firm can increase its value by issuing liabilities and buying more fixed capital. But this is a valid measure of the incentive to invest in fixed capital only when the market valuation relates to fixed assets alone. For many service sector firms, and increasingly for manufacturers, intangible assets account for a large part of a firm's market value. Because they are not included in the denominator of Tobin's  $q$ , this measure increasingly tends to overstate the incentive to invest in fixed capital or, taking another perspective, gives an increasingly misleading indicator of whether the stock market is overvalued.<sup>(2)</sup>

**Chart 11**  
Capital/output ratio



### Service sector employment and labour productivity

- *The share of employment accounted for by the service sector has been rising since 1970, with much of the growth coming from business and education and welfare services.*
- *Labour productivity growth in services appears to have been markedly lower (and less cyclical) than in manufacturing, though some of this may be caused by mismeasurement.*
- *International differences in whole-economy productivity growth have largely been driven by the relative performance of service sectors.*

Though the total of UK employee jobs was almost unchanged from 1970–97, the number of employee jobs in service industries grew by about five million. Service industries accounted for around 72% of total UK employee jobs in 1992, compared with 54% in 1970, with some of this

(1) 'Productivity convergence in OECD service industries', Gouyette and Perelman, in *Structural Change and Economic Dynamics* (1997).  
(2) See the *Inflation Report*, November 1997, page 24.

increase probably caused by the contracting-out of services by manufacturing. But this trend appears to have flattened after 1992, and the service sector share rose only slowly to 76% by 1996, before falling in 1997 for the first time since the 1970s, though the service sector continued to grow more rapidly than the rest of the economy. The service sector's share of self-employment has remained at around 60% since the late 1970s, but there has been a shift within this share away from wholesale and retail trade, and towards FRB services.

The demarcation between service and manufacturing employment is hazy, since the industrial and occupational definitions overlap. For example, a marketing worker employed by a pharmaceutical company could be seen as having a services occupation, but in the industrial sector of manufacturing. Occupational employee data for 1997 suggest that around 1.5 million manufacturing jobs were more like service sector jobs and 1.4 million *vice versa*. Because of the relative size of the two sectors, a much higher proportion (around one third) of the manufacturing sector comprised service sector-type jobs than the other way round. But even if employment were reclassified on an occupational basis, the service sector would not be much larger than as currently measured.

Areas where employee jobs have increased have been reasonably consistent since 1970. The fastest-growing sectors were the private business sectors of banking, finance, insurance and business services, and the welfare services of education and health. Employee jobs in public administration grew slowly in the 1970s and fell thereafter; employee jobs in T&C trended downwards during the period, though this may have flattened recently (see Table B).

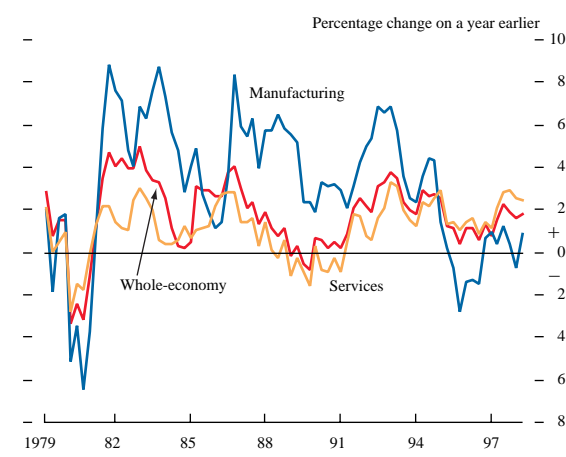
**Table B**  
**Employee jobs, by sector and major industry groups**

|  | Average percentage change 1980–97 | Thousands 1980 | 1990   | 1997   |
|--|-----------------------------------|----------------|--------|--------|
| Manufacturing sector   | -2.7                              | 6,311          | 4,605  | 4,001  |
| All services   | 1.2                               | 13,842         | 15,974 | 16,893 |
| <b>Service industries:</b>   |                                   |                |        |        |
| Distribution, hotels and catering  | 1.0                               | 4,354          | 4,816  | 5,116  |
| Business services and finance  | 2.9                               | 2,418          | 3,440  | 3,909  |
| Transport, storage and communications                                      | -0.6                              | 1,467          | 1,371  | 1,306  |
| Government and other services  | 1.0                               | 5,604          | 6,347  | 6,562  |
| Services as share of employee total (per cent)                             |                                   | 61.6           | 71.4   | 76.0   |
| Services <i>excluding government</i> as share of employee total (per cent) |                                   | 40.0           | 47.0   | 51.0   |
| Manufacturing share of employee total (per cent)                           |                                   | 28.1           | 20.6   | 18.0   |

Labour productivity growth on a per worker basis in manufacturing can be compared with that in services for the period 1979–97 (see Chart 12). Productivity growth in the service sector was generally lower than in manufacturing. Non-manufacturing productivity also appears to have been less volatile than manufacturing, suggesting that the greater variance of manufacturing output is not completely offset by comparatively higher swings in employment.

International estimates of relative productivity have often concentrated on manufacturing sector productivity levels and growth, not least because they are easier to estimate and because manufactured goods tend to be traded internationally more than services. But long-run estimates of sectoral productivity suggest that changes in service sector productivity have accounted for a large proportion of the changes in relative whole-economy labour productivity growth between the United Kingdom, United States and Germany. This has also been true of total factor productivity, implying that different capital/labour ratios across countries were not the cause. Microeconomic studies of the same subsets of the service sector (such as commercial banking) in different countries confirm that there are substantial international differences in labour productivity levels.

**Chart 12**  
**Annual labour productivity growth**



Within the service sector, only the T&C sub-sector—where there has been a net loss of jobs in the period—has had average annual labour productivity growth of more than 1% during the past 10–15 years. Bank of England estimates of labour productivity at a more disaggregated level in the past ten years suggest that mismeasurement may be a problem. A number of private service industries have had implausibly low or even negative productivity growth. For example, between 1986–95, productivity on an ‘hours worked’ basis fell in hotels and catering in seven years, of which five were consecutive; in business services and real estate, it fell in five years; and in wholesale and retail trade, in three. Mismeasurement may be particularly acute in the FRB sector.

### Service sector trade and foreign direct investment

- *Services are less extensively traded internationally than goods. This can be explained partly by the need of many services to maintain a local commercial presence, so that international competition operates via foreign direct investment rather than trade.*
- *As a proportion of gross trade flows, services have become less important in the past 30 years. The UK*

*value share of world service exports has fallen, but the increasing openness of the economy to trade means that service trade has risen as a proportion of GDP.*

- *The UK has a comparative advantage in services: the trade in services has consistently been in surplus, compared with a significant deficit in the trade in goods.*
- *The most important components of the UK service trade are financial and business services (which account for all of the overall surplus) and travel (a significant deficit item).*
- *Europe is the United Kingdom's largest trading partner for both goods and services, but the United States (with which the United Kingdom has significant services surpluses) is considerably more important for services than for goods trade.*

Services are less widely traded than goods on international markets. Exports contributed only 20% of value-added in the private service sector in 1990, compared with 42% in the production sectors (see Table C). But since the share of services in GDP is nearly three times that of manufacturing, service exports contribute more than 40% of total UK value-added from exports.

**Table C**  
**Export and import propensity by sector (1990)**

|  | Imports as percentage of domestic sales + imports | Percentage of sectoral value-added due to exports | Total sectoral export value-added as percentage of GDP |
|--|---|---|--|
| Production sectors                         | 33.8  | 42.4  | 10.7   |
| Total services                             | 4.2   | 12.8  | 8.5  |
| of which:                                  |   |   |  |
| Private services                           | 5.4   | 20.4  | 8.0  |
| of which:                                  |   |   |  |
| Transport and communications               | 12.1  | 25.8  | 2.1  |
| Business services and finance              | 4.7   | 21.0  | 3.4  |
| Distribution, hotels and catering; repairs | 3.1   | 16.6  | 2.4  |
| Public services                            | 1.4   | 1.8   | 0.5  |
| Whole economy                              | 15.0  | 19.6  | 19.6   |

Services firms are more likely than manufacturers to establish an overseas presence via foreign direct investment (FDI). Inward and outward FDI stocks of services account for some 40% of total UK FDI stocks, nearly twice the share of services in UK trade. In value terms, services FDI flows are considerably smaller than services trade. Average inward and outward FDI flows between 1991–94 were £9.2 billion, compared with £68.8 billion for average exports and imports in the same period. However, the real significance of overseas markets served via outward FDI is better reflected by the continuing stream of foreign sales by British firms in the host countries than by the initial investment itself recorded as FDI in the balance of payments.

The lower volume of trade in services can also be partly explained by politics. The barriers to services trade remain

considerably higher than those to trade in goods. These institutional barriers to trade in services are gradually being removed, for example as a result of the successful conclusion of the Uruguay round, while technological developments have expanded the scope for trade in some services. Consequently, world trade in services has been growing faster than world trade in goods. OECD trade in services (exports + imports) grew at an annual rate of 8.6% between 1980–90, compared with 6.7% for goods. Nonetheless, services trade accounted for only 22% of total OECD trade in 1992.

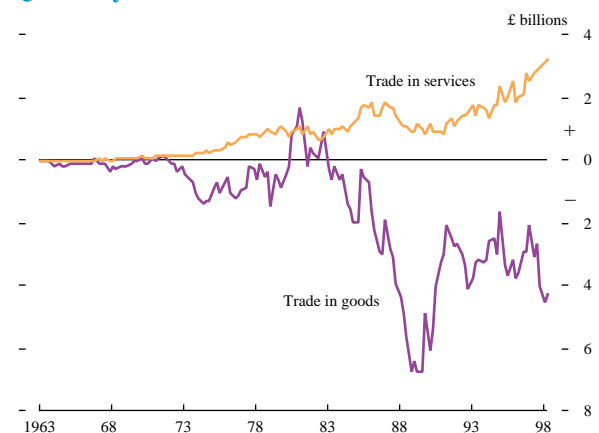
As a share of gross UK trade, services have become less important in the past 30 years.<sup>(1)</sup> Combined with the rising share of services in OECD trade, this means that, in value terms, the United Kingdom has been losing market share (see Chart 13), as other G7 economies have been converging towards the United Kingdom's higher share of services in total trade. Despite this, the United Kingdom appears to

**Chart 13**  
**UK share of world services exports (value terms)**



have a comparative advantage in services. The trade surplus in services for the last 30 years contrasts with the consistent trade deficit in goods (see Chart 14). The largest component of the UK service trade is FRB services. This category accounts for more than 40% of total service exports, and all of the overall surplus.

**Chart 14**  
**Quarterly balance of trade**



(1) This trend is evident in both exports and imports, and remains when the data are recast in volume terms.

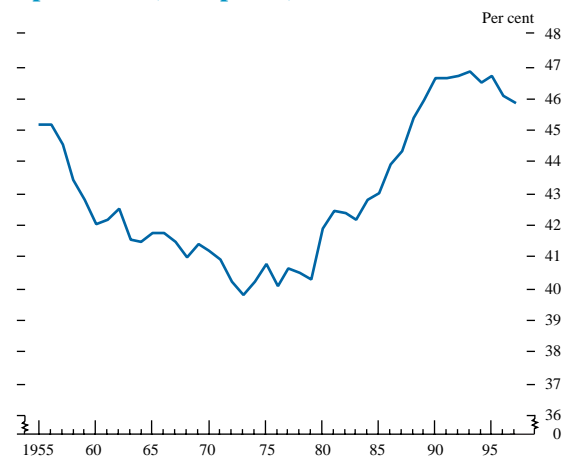
### Consumption of services and prices

- *The share of services in consumption, and consequently in the retail price index (RPI), increased sharply in the 1980s. Thereafter, the share has been stable at around 46%.*
- *Service price inflation, on the RPI measure, has been on average 2 percentage points higher than goods price inflation since 1988.*

Consumption of services made up 46% of total household consumption expenditure in 1997. The services share fell in the 1950s and 1960s, stabilised in the 1970s, and then increased sharply again in the 1980s following the liberalisation of financial services (see Chart 15). Since 1989, it has stabilised again.

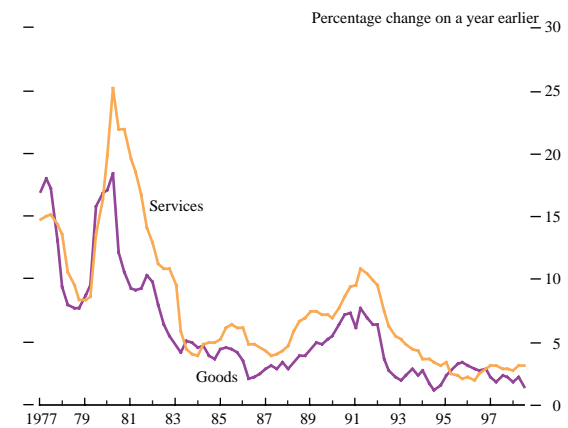
At the retail level, the share of services in total sales has risen only moderately over time. The retail price index (RPI) measures price movements in a typical consumer's basket of goods and services. Services made up around 35% of the RPI in 1997, compared with 30% ten years ago.<sup>(1)</sup>

**Chart 15**  
Services as a proportion of consumption expenditure (1995 prices)

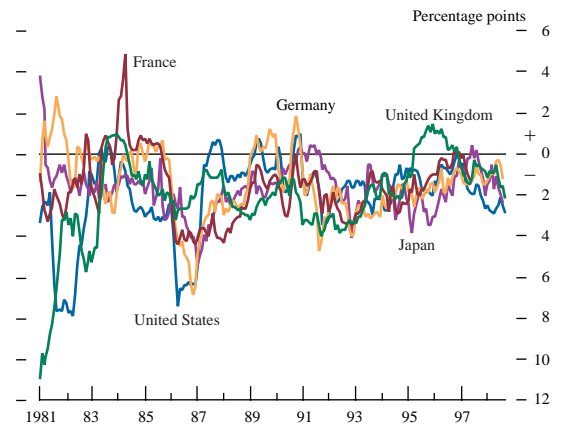


The Government's target for retail price inflation excluding mortgage interest payments (RPIX) is 2.5% per year. Since 1977, retail price inflation for services has been around 2 percentage points higher than that for goods in the United Kingdom (see Chart 16). There are relatively few examples, for only short periods, where retail goods inflation has been higher than service inflation. This result is consistent across countries—Chart 17 shows the difference between retail goods and service inflation rates for the United Kingdom, United States, Japan, France and Germany since 1981. In the United Kingdom, the wedge between goods and service price inflation is now half its long-run average, partly because average inflation has come down, but also because of falling utilities prices since the privatisation of a number of industries (see Chart 18).

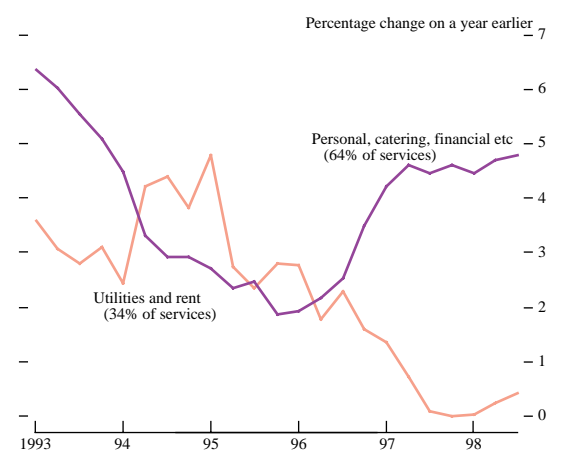
**Chart 16**  
Retail goods and service price inflation



**Chart 17**  
Goods price inflation minus service price inflation



**Chart 18**  
Service price inflation



There are at least five possible explanations for the general differential between goods and services price inflation. First, there could be systematically greater measurement bias for services than for goods, in terms of underestimating

(1) The share of services in the RPI is lower than in household consumption mainly because the RPI excludes the imputed rent of owner occupiers, a service.



quality improvements for which the consumer is willing to pay, thereby overstating the price increase and understating the quantity increase. Second, the lower exposure of services to international trade may create less incentive to innovate and improve productivity growth. So service prices will continue to rise relative to goods. Third, the same will occur if average productivity growth is intrinsically faster in manufacturing than services. Fourth, international competition may be increasing at a faster rate for goods than for services, leading to a more rapid erosion of manufacturers' margins. Fifth, even if competitive pressures are equally strong, there may be certain characteristics of some services that allow more price complexity, and therefore market power, by producers. Customisation (versus commoditisation) and direct interaction between the producer and consumer (versus arm's-length sales through intermediaries) make price comparisons more difficult for consumers. These factors could also cause service prices to rise more rapidly than goods prices, at least over a transitional period.

## Conclusions

With the growing significance of the service sector in the UK economy, it becomes increasingly important to understand how the sector behaves, not least because of its potential impact on inflation, and in achieving the inflation

target set by the Government. But less is still known about services than about the manufacturing sector. The initial findings of the Bank's project team, described in this article, give rise to a number of issues that might be followed up in further work, by either the Bank or others. In particular:

- *Why is measured service sector inflation consistently higher than goods inflation? Which of the alternative hypotheses accounts for the difference, and what does that imply for the definition of the inflation target?*
- *Are service sector output and trade flows more or less sensitive to shocks transmitted through the exchange rate and/or interest rates than the remainder of the economy?*
- *Are data mismeasurement problems likely to be more serious in the service sector than in manufacturing? Does this have implications for measured service sector inflation, output and productivity growth?*
- *What additional survey or official data on the service sector could best contribute to understanding and monitoring its structural and cyclical output and price behaviour?*