

# Can differences in industrial structure explain divergences in regional economic growth?

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*During the early to mid-1990s, the pace of economic growth in the South was broadly comparable with that in the rest of the United Kingdom. During 1996–98, however, the pace of activity in the South strengthened considerably relative to the rest of the country. This article investigates one possible explanation for divergences in growth between the two regions—namely differences in the relative importance of the manufacturing and service sectors. The results suggest that such differences in industrial structure do not account for the majority of the regional divergences in growth. Rather, it appears that they are explained mostly by a pick-up in population growth and stronger service sector activity in the South relative to that in the rest of the country over the period.*

## Introduction

The Bank of England has a responsibility to monitor regional and sectoral information for the purposes of formulating monetary policy. Examining the differences in economic activity between the regions can improve understanding of the nature of economic cycles, and of the transmission of policy changes through the national economy.

One possible explanation of any disparity in regional economic growth rates is that it reflects regional differences in industrial structure. This article assesses the extent to which such differences can explain observable differences in rates of regional economic growth.<sup>(1)</sup>

## Regional GDP growth

Regional GDP data in current prices are published annually by the Office for National Statistics. Table A shows average annual growth of nominal GDP for Scotland, Wales, Northern Ireland and England's regions for 1990–99.<sup>(2)</sup>

Table A shows that nominal GDP growth in the southern regions of the United Kingdom was somewhat stronger

**Table A**  
**Nominal GDP**

Average annual growth 1990–99; per cent

Northern Ireland	6.2
South East	6.2
London	6.0
East	6.0
South West	5.5
West Midlands	5.3
East Midlands	5.3
Scotland	5.3
Yorkshire and the Humber	5.2
Wales	4.9
North West	4.6
North East	4.2

**United Kingdom**      **5.5**

than in almost all the other UK regions over the period. However, the data in the table conceal considerable variation in regional growth rates from year to year and how the relative performance of the regions has changed over time.

It is difficult to analyse and present a comparison of the twelve regions, so for simplicity we group them—in this case, into the 'South'<sup>(3)</sup> and the 'rest of the United Kingdom'.

Chart 1 shows nominal GDP growth for the two regional groupings over the 1990s.<sup>(4)</sup>

Regional GDP data are available only in current prices. So published GDP growth in a particular region

(1) This article does not address the related issue of regional differences in the level of GDP per capita and how they may relate to differences in economic prosperity across regions.

(2) A longer time series on a consistent basis is not currently available, following recent revisions to the regional accounts to bring the data into line with the new European System of Accounts 1995 (ESA95).

(3) The 'South' covers London, the South East and the South West—based on government office regions, as shown in Table A. It is worth noting, however, that any such grouping into regional areas is arbitrary. Alternative definitions of the 'South' (eg including the East, which includes sub-regions close to London) would give slightly different results.

(4) It is important to highlight the provisional nature of these data. Regional GDP data are revised on an annual basis, taking account of revisions to the UK total included in *UK National Accounts—The Blue Book*, as well as revised regional indicator data. In particular, regional estimates of wages and salaries for 1997 to 1999 are not yet available from the Inland Revenue. When available, these will replace the employment and earnings survey estimates currently being used for these years.

### Chart 1 Nominal GDP growth

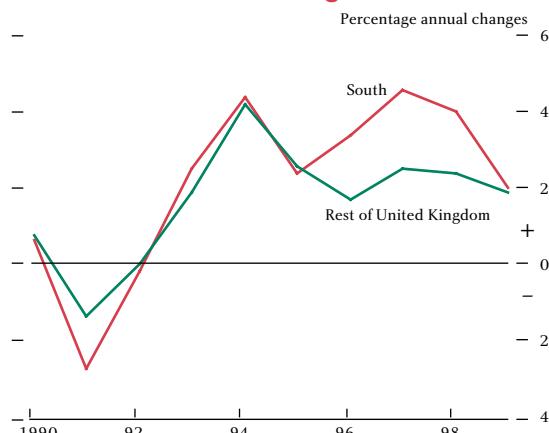


reflects not only an underlying increase in economic activity, but also any increase in prices during the period. To analyse trends in real activity (or 'economic growth'), we need to deflate the data to remove the effects of price changes.

There are, however, no regional price data, so the best we can do is construct proxy estimates from the available national data. There are national implied deflators for the different sectors (eg manufacturing and services);<sup>(1)</sup> weighting these together according to a particular region's industrial mix gives a crude proxy for the corresponding regional output price deflator.<sup>(2)</sup> This takes account of the different industrial mix in different regions, but makes the simplistic assumption that the rate of sectoral inflation is common across the country; for example, that the change in manufacturing prices is the same in all regions. Since there is no way of testing if the proxy is accurate, the conclusions of this article are necessarily qualified by the possibility that regional rates of output price inflation differ.

Chart 2 shows estimates of real economic growth for the two regional groupings, based on nominal GDP data deflated by the regional output price proxies.<sup>(3)</sup> Though the two regional groupings recorded similar rates of growth during the early to mid-1990s, activity diverged considerably during 1996–98—the average difference in

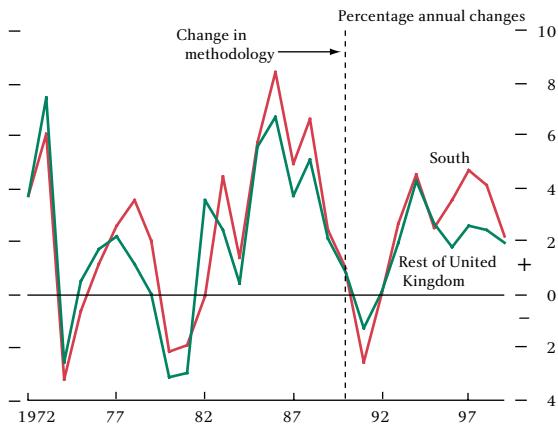
### Chart 2 Estimates of real economic growth



annual growth during this period was around 2 percentage points. The pace of activity converged again in 1999 (the latest data available).<sup>(4)</sup>

Although not consistent with the published regional accounts series, an examination of previously published historical data suggests that the magnitude of the divergence during 1996–98 is not unprecedented (see Chart 3). Although growth in the two regions has tended to follow a very similar pattern, average growth in the South was higher than in the rest of the United Kingdom during the previous two decades as well.

### Chart 3 Estimates of historical real economic growth



(1) Taken from the *UK National Accounts—The Blue Book, 2000 edition*.

(2) Any attempt to deflate official nominal regional GDP data using national output price indices will necessarily be imprecise. As such, it is important to note that the resulting estimates of real economic activity should not be assumed to be of similar quality to the published official (nominal) regional data or to the data published by the ONS more generally. Consequently, the limitations of these estimates of real economic growth should be borne in mind when reading this article. These issues are discussed in more detail in the December 2000 issue of *Economic Trends*, in which the ONS provides a methodological guide to the published regional GDP data.

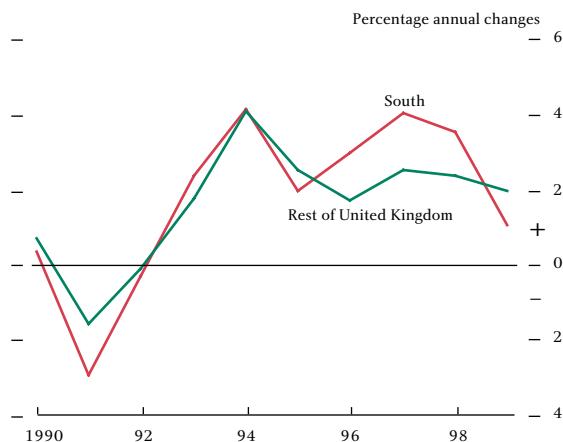
(3) It is worth noting that, despite taking into account regional variations in industrial structure, the constructed estimates suggest only small differences in movements of regional output price deflators during the 1990s.

(4) Clearly these regional groupings can conceal considerable intra-regional movements. Most of the regional divergence that began in 1996 was accounted for by a downturn in growth in Scotland, Wales, the West Midlands and Northern Ireland. Similarly, while all regions recorded lower growth in 1999 compared with 1998, a significant slowdown in growth in London was responsible for most of the convergence in growth between the two regional groupings.

## Population

Differences in regional activity may reflect differences in the pace of population growth. The contribution from population growth can be removed by examining output per capita (see Chart 4).<sup>(1)</sup>

**Chart 4**  
Estimates of real economic growth per capita



Estimates of real regional economic growth per capita follow a similar pattern to that shown in Chart 2. That is, economic growth per capita in the South strengthened compared with that in the rest of the United Kingdom during 1996–98. However, the differential is less marked than in Chart 2, suggesting that relative population growth contributed to part of the divergence. For example, stronger population growth in the South accounted for around 0.6 percentage points of the 2.1 percentage point differential in real economic growth between the two regions during the peak of the differential in 1997.

## Industrial structure

Divergences in economic growth may also reflect regional differences in industrial structure. Table B compares the proportions of total value added accounted for by the various sectors in the two regional groupings. Clearly there are significant regional

**Table B**  
Industrial share in 1998

Percentage of total value added

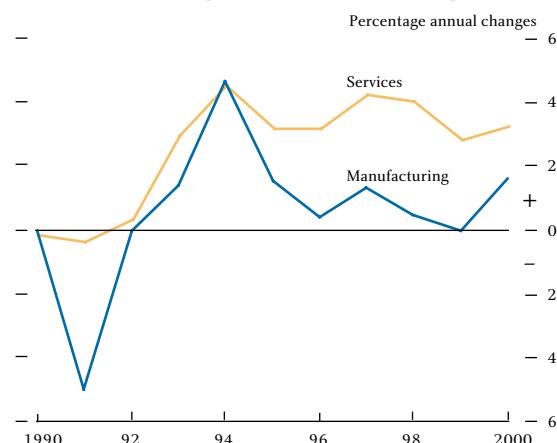
	South	Rest of United Kingdom
Manufacturing	14.3	24.2
Services	77.6	65.6
Other	8.2	10.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

Note: 1998 is the latest available year for regional data by industry.

differences in the relative importance of the manufacturing and service sectors, though there is little difference in the importance of the 'other' sectors.<sup>(2)</sup>

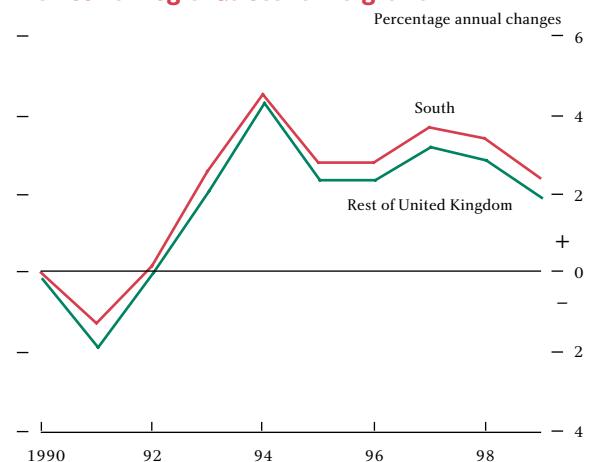
It is often suggested that the greater significance of the service sector in the South, together with the stronger aggregate performance of the service sector relative to the manufacturing sector (see Chart 5), may explain the relatively stronger economic growth in the South.

**Chart 5**  
UK manufacturing and service sector growth



To assess the quantitative importance of this 'industrial structure' effect, we consider how the pattern of regional growth would change if divergences were explained purely by differences in the weights of the various sectors (notably manufacturing and services); ie assuming the same pace of sectoral growth in both regions. To do this we take national growth rates for the various sectors of the economy and weight them according to the industrial shares of individual regions to develop a proxy for regional economic growth.<sup>(3)</sup> The results are shown in Chart 6.

**Chart 6**  
Proxies for regional economic growth



(1) Using published nominal GDP per capita data, deflated using an identical method to that used in Chart 2.

(2) The 'other' sectors include agriculture, mining, electricity supply and construction.

(3) Industry shares are for 1998, for which the data are the latest available.

The closeness of the lines on the chart suggests that the manufacturing/services split can account for only a small proportion of the divergence in growth rates seen in Chart 2. In fact, of the estimated 2.1 percentage point differential in real economic growth rates in 1997, only around a fifth is explained by broad sectoral differences in industrial structure.<sup>(1)</sup> So there must be other factors contributing to the regional divergence.

### Intra-sectoral mix

Analysis of the intra-sectoral mix of each region may shed more light on the differences in regional economic performance.

#### (i) Manufacturing

The southern regions contain a higher proportion of the 'high-tech'<sup>(2)</sup> sectors of manufacturing (see Table C). These industries make up around 28% of manufacturing in the South, compared with only 22% in the rest of the United Kingdom. That may help to explain the relatively stronger activity in the South, since the divergence in the growth rates of the high-tech industries and the rest of manufacturing has widened in recent years (see Chart 7).

**Table C**  
**Shares of manufacturing in 1998**

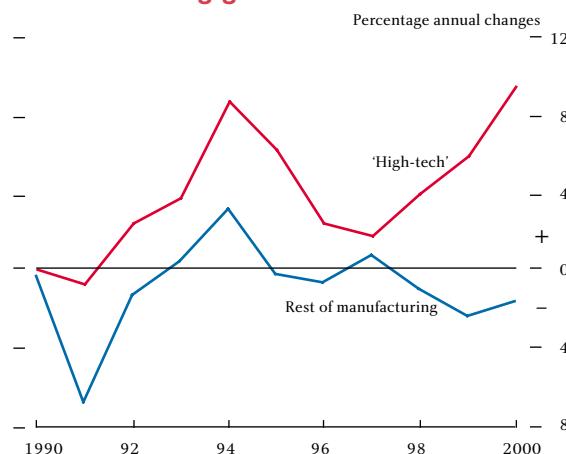
Percentage of manufacturing value added

	South	Rest of United Kingdom
High-tech <sup>1</sup> manufacturing	28.0	21.9
Electrical and optical equipment	17.4	11.7
Chemicals	10.6	10.2
Rest of manufacturing	72.0	78.1

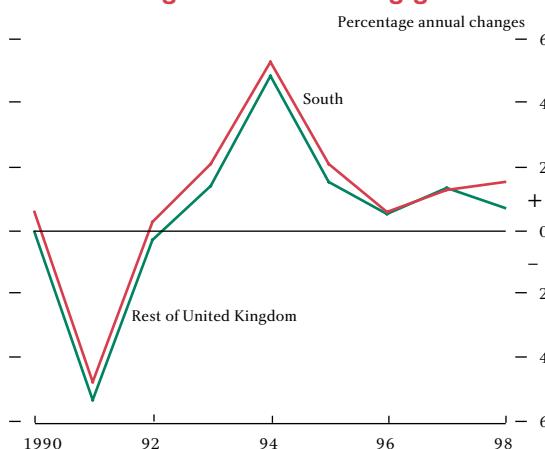
Using a similar technique to that in Chart 6, we consider how the pattern of regional manufacturing growth would change if divergences were explained by differences in the types of manufacturing industries across regions (see Chart 8).<sup>(3)</sup>

We find that regional differences in the mix of industries within the manufacturing sector provide little additional explanation for the divergences in regional activity during 1996–98.

**Chart 7**  
**UK manufacturing growth**



**Chart 8**  
**Proxies for regional manufacturing growth**



This pattern compares closely with estimated outturns of real manufacturing growth in the two regional groupings (see Chart 9).<sup>(4)</sup> It appears that there has been little difference in manufacturing growth in the two regions for most of the period. Moreover, a more detailed analysis of manufacturing performance shows little regional difference in average annual growth rates of the high-tech industries and the rest of manufacturing.

The higher proportion of high-tech industries in the South appear to have benefited overall manufacturing growth in the region in more recent years. The disparity between growth in the manufacturing industries began to widen in 1998 (see Chart 7), which coincided with stronger relative manufacturing growth in the South. But most of the benefit to the South from the

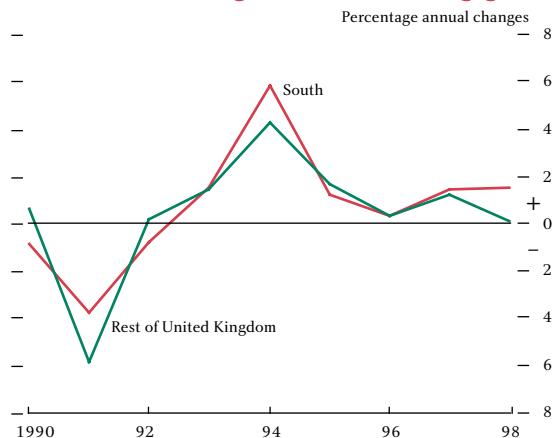
(1) Which incorporates a breakdown into manufacturing, services, agriculture, construction, mining and electricity supply industries.

(2) In this case, 'high-tech' includes the 'electrical and optical engineering' and 'chemicals' industries within the manufacturing sector.

(3) For this process, the most disaggregated level of data available for manufacturing sector activity by industry was used. Unlike Table C, this breaks the manufacturing sector down into 13 industries.

(4) Obtained using published nominal regional manufacturing output data, deflated using regionally weighted national manufacturing implied deflators at a highly disaggregated level. This is to take account of the differences in the mix of manufacturing industries between regions.

### Chart 9 Estimates of real regional manufacturing growth



strengthening in high-tech industries is not yet captured in the regional accounts data because regional manufacturing growth figures are available only to 1998. It seems likely, however, that the further widening of the gap between high-tech growth and the rest of manufacturing in 1999 and 2000 will have benefited manufacturing growth in the South relative to the rest of the United Kingdom.

So there is little evidence to suggest that any of the regional divergence in the pace of activity during 1996–98 is explained by differences in manufacturing growth.

### (ii) Services

Table D provides a breakdown of the service sector shares in each region. Of the main sectors, the South contains a smaller proportion of the slowest-growing service sectors—distribution, hotels and catering; and government and other services.<sup>(1)</sup>

#### Table D Shares of services in 1998

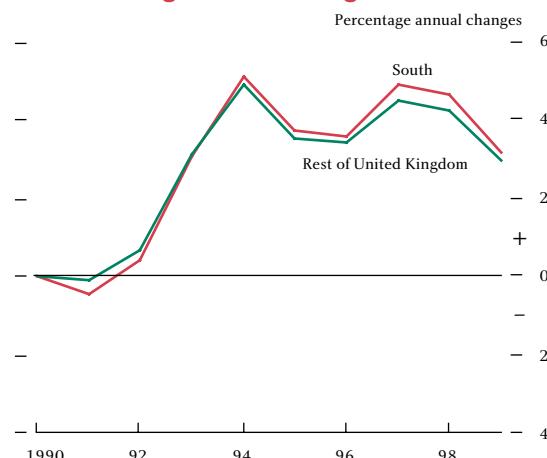
Percentage of service sector value added

	South	Rest of United Kingdom
Distribution, hotels and catering	20.5	23.3
Transportation and communications	12.1	11.7
Business and financial services (a)	38.7	30.4
Government and other services	28.8	34.6
<b>Total services</b>	<b>100.0</b>	<b>100.0</b>

(a) Includes financial intermediation services indirectly measured (FISIM).

Using the same technique as before, we find that regional differences in the mix of industries within the service sector<sup>(2)</sup> are able to explain some additional part of the divergence in economic growth (see Chart 10).

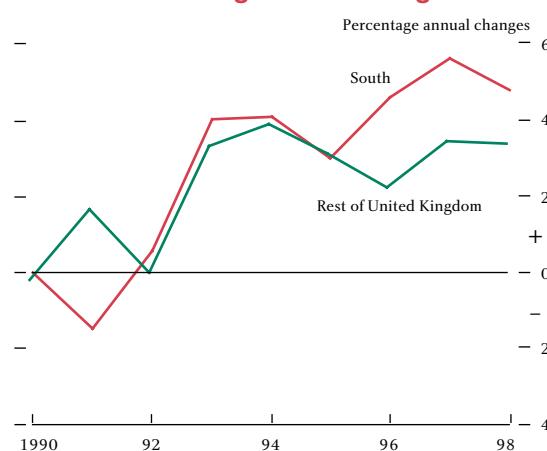
### Chart 10 Proxies for regional services growth



But although regional differences in the mix of industries, particularly within the service sector, can account for more of the divergence than the manufacturing/services split alone, much of the differential in regional economic growth rates is still to be accounted for.

Chart 11, showing estimates of real service sector growth in the two regional groupings, provides some explanation. It appears that the differential between service sector output growth rates in the South and the rest of the country is much greater than that explained by the types of firms located in each region. The series follow a similar pattern of regional growth to that in Chart 2—with weaker growth in the South in 1991, and relatively stronger growth during 1996–98.

### Chart 11 Estimates of real regional services growth



Sectoral data are available only up to 1998, so it is not yet possible to establish whether service sector growth rates converged in 1999—as overall economic activity did. However, given the considerable weight of service

(1) Since 1990, these two sectors have recorded the slowest average annual growth.

(2) For this process, service sector activity is disaggregated into nine industries.

sector activity in the value added of both regional groupings, it appears likely that most of the convergence in regional economic growth rates in 1999 was driven by a convergence in service sector growth. Moreover, the likely strengthening of manufacturing growth in the South relative to the rest of the United Kingdom in 1999, discussed above, adds further support to this view.

So what accounts for the stronger service sector growth in the South during 1996–98? Table E, giving a regional breakdown of growth in the individual service sectors, provides more detail.

**Table E**  
**Service sector growth**

Average annual real growth; per cent

	1993–95		1996–98	
	South	Rest of United Kingdom	South	Rest of United Kingdom
Distribution, hotels and catering	4.4	3.5	3.8	2.5
Transportation and communications	5.4	6.1	8.0	5.8
Business and financial services (a)	4.8	3.6	6.0	4.7
Government and other services	1.4	2.9	2.9	1.3

(a) Includes financial intermediation services indirectly measured (FISIM).

It appears that growth in the South was stronger than in the rest of the United Kingdom during 1996–98 in all of the major sectors of services activity.

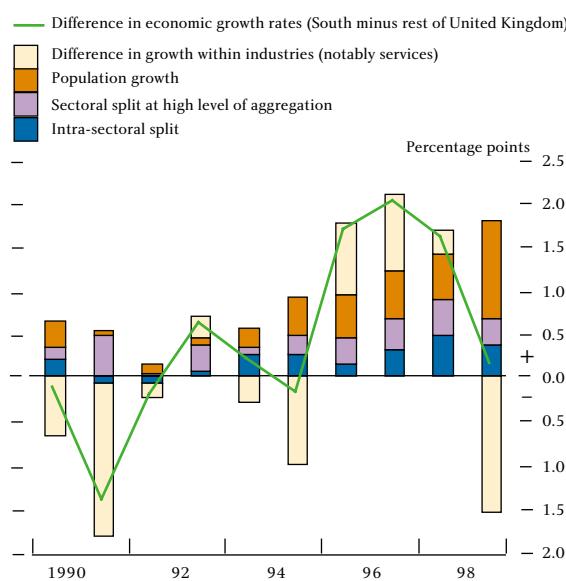
As Chart 10 shows, it appears that the South has benefited to some degree from having a relatively larger proportion (particularly in London) of faster-growing sectors such as business and financial services, which strengthened considerably during the second half of the 1990s. Moreover, during most of this period, growth in business and financial services activity in the South was somewhat stronger than in the rest of the United Kingdom (see Table E).

However, there is little evidence to suggest that regional differences in the pace of activity in these industries contributed to the regional divergence in activity in 1996–98. This is because the differential in business and financial services growth rates between the South and the rest of the United Kingdom during this period was similar to in earlier years. Most of the divergence appears to be due to a pick-up in growth in transport and communications and government and other services activity in the South relative to the rest of the country.

## Contributions to divergences

To summarise these findings, Chart 12 provides estimates of the various contributions to the divergence

**Chart 12**  
**Estimated contributions to divergences in regional economic growth**



in regional economic growth rates over the period. While it appears that differences in the proportions of manufacturing and service sectors (and the types of industries within these sectors) can account for some of the divergence in 1996–98 (explaining around one third on average), the majority of the divergence is explained by a pick-up in the contribution from population growth and stronger growth within service sector industries in the South.

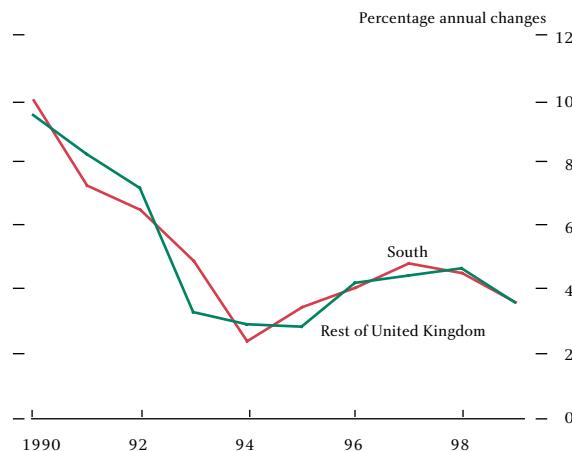
There are no clear-cut explanations for stronger service sector growth in the South. In particular, data limitations restrict our ability to draw any concrete conclusions.

One limitation of the above analysis is that the regional industry data are not sufficiently detailed, and may be concealing more significant differences at an even more disaggregated industry level. For example, Table E shows that there have been significant differences in the regional growth rates of the transport and communications sector. While the data show only a relatively small difference in the importance of the transport and communications sector to both regions, there may be significant mix differences that have also contributed to the regional divergence. For example, the South may have a relatively larger proportion of telecommunications firms, which have shown a particularly strong performance since the mid-1990s relative to the growth of transport activity.<sup>(1)</sup> This could imply that the contribution of industrial mix (seen in Chart 12) is being underestimated.

(1) During 1996–98, growth in UK telecommunications output was more than twice that recorded by the transport sector.

In addition, part of the stronger service sector growth may reflect a pick-up in service sector inflation in the South relative to the rest of the United Kingdom. That is, the assumption underlying the method used to deflate the nominal GDP data may not hold. As noted above, there is no definitive method of testing this proposition. But an examination of regional earnings growth may provide some indication. Chart 13 shows annual average earnings growth<sup>(1)</sup> for the two regional groupings over the period. The data show little difference in the pace of nominal regional earnings growth over the 1990s. This may provide some support to the view that inflationary pressures in the two regions are similar.<sup>(2)</sup>

**Chart 13**  
**Average weekly earnings growth**



However, even if the divergence in regional economic growth could be established as a real strengthening as opposed to a price-related phenomenon, finding a convincing explanation for the stronger Southern service sector growth would remain difficult.

There is a growing economic literature on the relative performance of regions, and how firms that locate in a particular region may derive benefits (eg through lower production and distribution costs) from clustering with other similar firms (see Krugman (1991) for example). Bernat (1999) uses similar reasoning to explain stronger economic growth of the southern regions in the United States relative to other regions. He suggests that recent externalities related to innovation can explain key regional characteristics of stronger southern economic

growth in the United States. In other words, if firms located close together adopt productivity-enhancing innovations before firms in other regions, they will grow faster.

The divergence in service sector growth in the southern regions of the United Kingdom during 1996–98 does not appear to reflect a pick-up in productivity growth relative to the rest of the country, as might be expected in the above scenario.<sup>(3)</sup> Average service sector productivity growth in the South was little different to that in the rest of the country during the period.<sup>(4)</sup>

Rather, it appears that the relative pick-up in southern economic activity during 1996–98 almost entirely reflects stronger employment growth. As mentioned earlier, some of this pick-up in employment growth is likely to reflect relative movements in population growth. But the relative improvement in employment growth in the South more than accounted for any increase in labour force during the period. As a result, employment rates<sup>(5)</sup> in the two regional groupings diverged during the period.

Other explanations suggest that firms in some regions may benefit from natural geographical advantages (see Ellison and Glaeser (1999)) or other idiosyncratic benefits from their location (such as infrastructure or access to a more diverse labour force). However, such explanations would fit better with consistently stronger growth in the South.

## Conclusion

The different industrial structures of the South and the rest of the United Kingdom do not explain the majority of the divergence in regional economic growth between 1996–98. Although the larger share of service sector activity (and larger share of strongest-performing services sub-sectors) in the South has contributed somewhat to stronger overall growth, most of the difference is explained by a relative pick-up in population growth and stronger growth in service sector activity in the South relative to the rest of the United Kingdom.

(1) Using New Earnings Survey data for average gross weekly earnings of full-time employees by government office region.

(2) This argument assumes that real earnings growth in the two regional groupings is also similar. Since there is no reasonable way of testing this, implications for relative regional inflation rates are qualified by the possibility of differences in real earnings growth.

(3) A caveat to this is the effect on productivity from the relative strengthening of southern population growth during the period, and its consequent impact on relative employment growth. In the short to medium run, this may dampen productivity in the South, until capital catches up. So it may be difficult to separate any population effect from other factors such as clustering that may be affecting productivity.

(4) Using regional employee jobs by industry data. It is also worth noting that whole-economy productivity growth was also similar in the two regional groupings.

(5) Defined as the number of employed persons as a percentage of all persons of working age.

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