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## Economic brief



### *ICT investment and Productivity in the UK: a Regional Assessment*

Raising the level of UK productivity is one of the key objectives of the Government<sup>i</sup>. A related question of interest concerns productivity levels in the UK regions. According to the Chancellor<sup>ii</sup>: "...any regional economic policy that is consistent with those overall ambitions for the economy cannot simply be about re-distribution of existing economic activity. Instead it must focus on increasing and realising the potential of all localities - towns, cities and rural areas - with the ambition of raising the performance of under performing areas to that of the best. The challenge of improving the performance of every region and nation is immense, but it is one in which we must succeed if we are to secure long term prosperity for all."

Dealing with productivity is not an easy task for at least two reasons. On the one hand, there are considerable difficulties in measuring productivity. On the other, although there is a good understanding of the factors driving productivity, there is still a degree of uncertainty regarding their relative importance. In this Economic Brief we report our estimates of the contribution of Information and Communication Technologies (ICT) to productivity growth on both a sectoral and regional basis.

At the end of 2002, Cisco Systems commissioned a study from London Economics to undertake an economic analysis of the contribution of ICT to the performance of the UK economy. The

study focused on 12 sectors representing the entire UK economy over the period 1992-2001<sup>iii</sup>.

For that study, we used a methodology based on growth accounting techniques. Growth accounting essentially decomposes output growth (or labour productivity growth) in a number of constituent parts so that the various contributions to growth can be measured. Generally speaking, two sources of growth can be identified: growth in production inputs (capital and labour) and Total Factor Productivity growth.

The key results of this analysis are displayed in the chart overleaf. Economy-wide, ICT investment over the last decade made an average contribution to labour productivity growth of 0.76 percentage points per annum, and accounted for 47% of the total annual average increase in labour productivity.

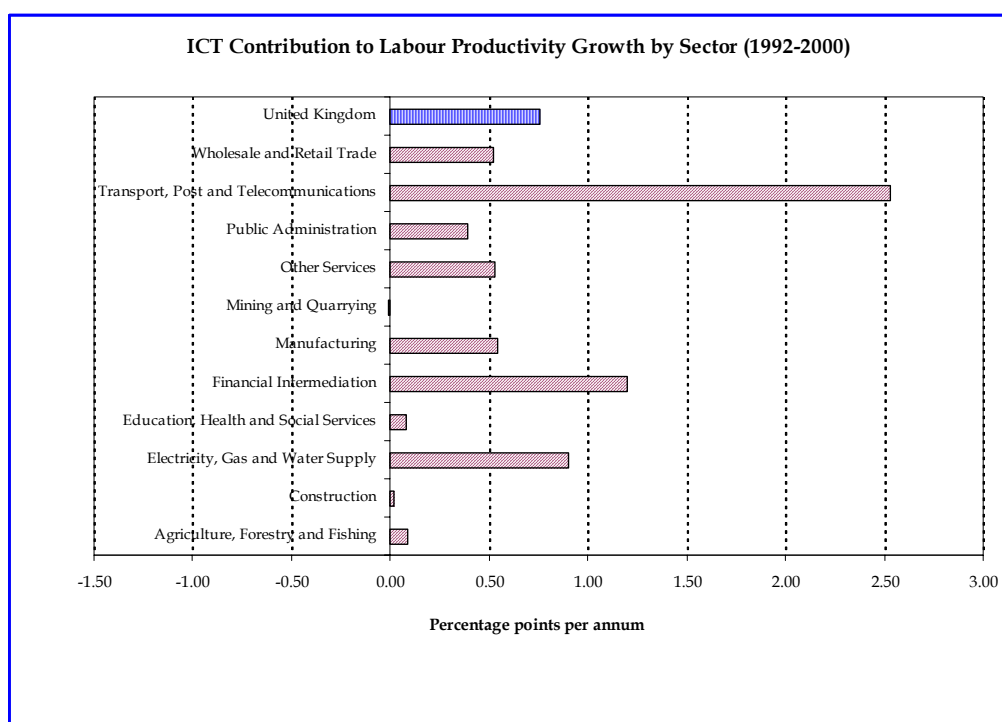
Looking at the results at the sector level, we can see that many sectors benefited from ICT investment. In the Manufacturing sector, the average contribution to labour productivity was 0.54 percentage points per annum (p.p. p.a.). ICT investment made a 1.2 p.p. p.a. contribution to labour productivity growth in the Financial Intermediation sector, whilst its contribution to the Wholesale and Retail Trade sector was 0.52 p.p. p.a. Contributions in these three sectors are particularly important as they account for over 60% of the UK GDP. The Post and Telecommunication

sector shows the highest contribution from ICT (2.53 p.p. p.a.), but this does not substantially affect the economy-wide results due to the sector's modest share of economy-wide GDP.

Building on the regional output data, we further estimated the contribution of ICT to labour productivity growth in the 12 UK regions. This analysis sheds light on how ICT investment has impacted differently on labour productivity across the regions due to a different regional production mix.

1.08 p.p. p.a. in the South East, 0.73 p.p. p.a. in the East and 0.7 p.p. p.a. in the North West. Contributions above 40 p.p. p.a. were found in five other regions, namely Yorkshire, West Midlands, South West, Scotland, and the East Midlands. Finally, smaller but still positive contributions were found for the remaining three regions: Wales, Northern Ireland and the North East.

These results are largely explained by the fact that the sectors that invested more in ICT (Financial Intermediation



The key results are reported in the chart overleaf. As expected, the contribution of ICT to labour productivity growth varies markedly across regions, reflecting differences in the composition of output. Two regions (London and the East) show a contribution from ICT above the national average (UK) and all the others below.

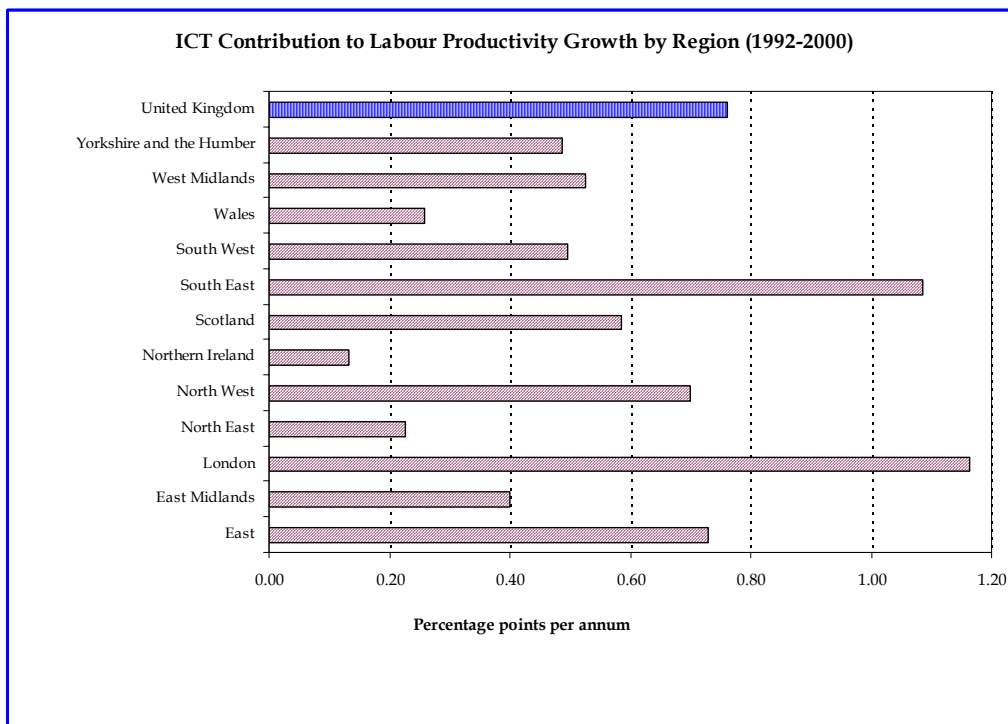
Looking at the detailed results, over the period 1992-2001 the average ICT contribution to labour productivity growth was 1.16 percentage points per annum (p.p. p.a.) in the London region,

and Transport, Post and Telecoms) have a stronger presence in some regions than in others. Nevertheless, all the other regions show positive but smaller contributions from ICT investment to labour productivity growth.

This exercise contains some important messages for economic policies. It confirms that raising capital per worker is an important element of labour productivity growth and that these contributions are economically non-negligible.

Policy action to improve regional productivity levels requires a good understanding of what drives productivity in the regions. Our framework is able to provide further

insights in productivity-related subjects and can also be applied to analyse the likely outcomes of policy action in this area.



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<sup>i</sup> See, for example, “Productivity in the UK: the evidence and the government’s approach”, November 2000, HM Treasury.

<sup>ii</sup> “Productivity in the UK: 3 – the regional dimension”, November 2001, HM Treasury.

<sup>iii</sup> ICT and GDP growth in the United Kingdom: a sectoral analysis, London Economics’ report for Cisco Systems, available at [http://www.cisco.com/global/UK/new\\_press/home\\_new\\_press.shtml](http://www.cisco.com/global/UK/new_press/home_new_press.shtml).