
Nicholas Oulton and Sylaja Srinivasan

Discussion by
Kevin J. Stiroh*

Perspectives on Potential Output and Productivity Growth
Bank of France
April 24, 2006

*The views expressed here are those of the author only and do not necessarily reflect those of the Federal Reserve Bank of New York of the Federal Reserve System.
Summary

• **Three papers**
  – Industry-level database
  – Traditional growth accounting
  – Econometric tests of growth accounting assumptions

• **Key results**
  – Significant ICT capital deepening contribution for 1990-2000
  – Structural change matters
  – Impact of ICT increases with long time period
  – Slowdown in TFP growth after 1995
    • Possibly due to “complementary investment”

• **Questions and comments**
What Happened since 2000?

- Considerable work behind industry productivity analysis
- But, since 2000, the puzzle deepens
U.S. and U.K. Productivity Diverges

Note: Productivity is GDP per hour worked. All figures are average annual percent growth from GGDC.
What Explains the U.S./U.K. Divergence?

• Industry reallocation?

• O-S show ALP growth mostly within industry effect
  – Same in U.S.

• U.K. reallocations are increasingly negative
  – Output shifting toward industries with relatively low productivity levels

• U.S. reallocations increasingly positive
  – Stiroh (2006) through 2004
## Industry Contributions and Reallocations

\[
\hat{Q} = \sum s_i \hat{Q}_i + \sum r_i \left( \frac{P_i \hat{Q}_i}{PQ} - 1 \right) (\hat{H}_i - \hat{H})
\]

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<tr>
<td>Total</td>
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<td>Reallocation</td>
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Source: Oulton and Srinivasan, Table 6.3.

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<tr>
<td>Total</td>
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<td>2.26</td>
<td>3.06</td>
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<td>Within</td>
<td>1.62</td>
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Source: Stiroh (2006), Table 8.
What Explains the U.S./U.K. Divergence?

• Concentration of productivity and ICT capital?

• U.K. TFP acceleration is more concentrated
  – U.K.: 7 out of 31 industries
    • 1995-00 less 1990-95, Chart 6.10
  – U.S.: 26 out of 41 industries
    • 1995-00 less 1977-95, JHS (2005, Figure 8.4)

• U.K. ICT capital is more concentrated
  – U.K.: Top 5 industries account for 75%
    • 1990-00, Chart 6.12
  – U.S.: Top 5 industries account for 52%
    • JHS (2005, Table 8.7)
What Explains the U.S./U.K. Divergence?

- Industry reallocation?
- Concentration of productivity and ICT capital?
- Why?
Econometric Results

• **Estimate production functions and conclude**
  – IV estimates implausible, so use OLS
  – Decreasing returns
  – Results more significant with longer differences
  – ICT coefficients larger than expected

• **Why might ICT coefficients be larger?**
  – Endogeneity
  – Omitted variables
  – Spillovers

• **O-S suggest the last, but not convinced**
  – Production function estimation is hard!
Complementary Investment

• Nice discussion of offsetting measurement errors
  – Old idea, Jorgenson (JPE 1966), but often forgotten

• Corrado, Hulten, and Sichel (2006) for U.S.
  – Intangibles are large - same size as tangible investment
  – Raises growth rate, but doesn’t change post-1995 acceleration

• How does this compare to U.K.?
What’s Missing?

- Importance of IT-producing industries
- Some discussion of cyclical factors
- Focus on value-added in econometric work
Conclusions

• Very nice paper - excellent job on explaining what happened in the U.K. in the 1990s

• Why did it happen?
  – Why did output shift to industries with low productivity levels?
  – Why limited ICT diffusion?

• What is implication for future?
  – Will complementary investment allow future productivity to surge?
  – O-S theory suggests yes, but data through 2005 suggest not yet

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