

Productivity Growth in UK Industries, 1970-2000: Structural Change and the Role of ICT

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Discussion by
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Perspectives on Potential Output and Productivity Growth
Bank of France
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*The views expressed here are those of the author only and do not necessarily reflect those of the Federal Reserve Bank of New York or the Federal Reserve System.

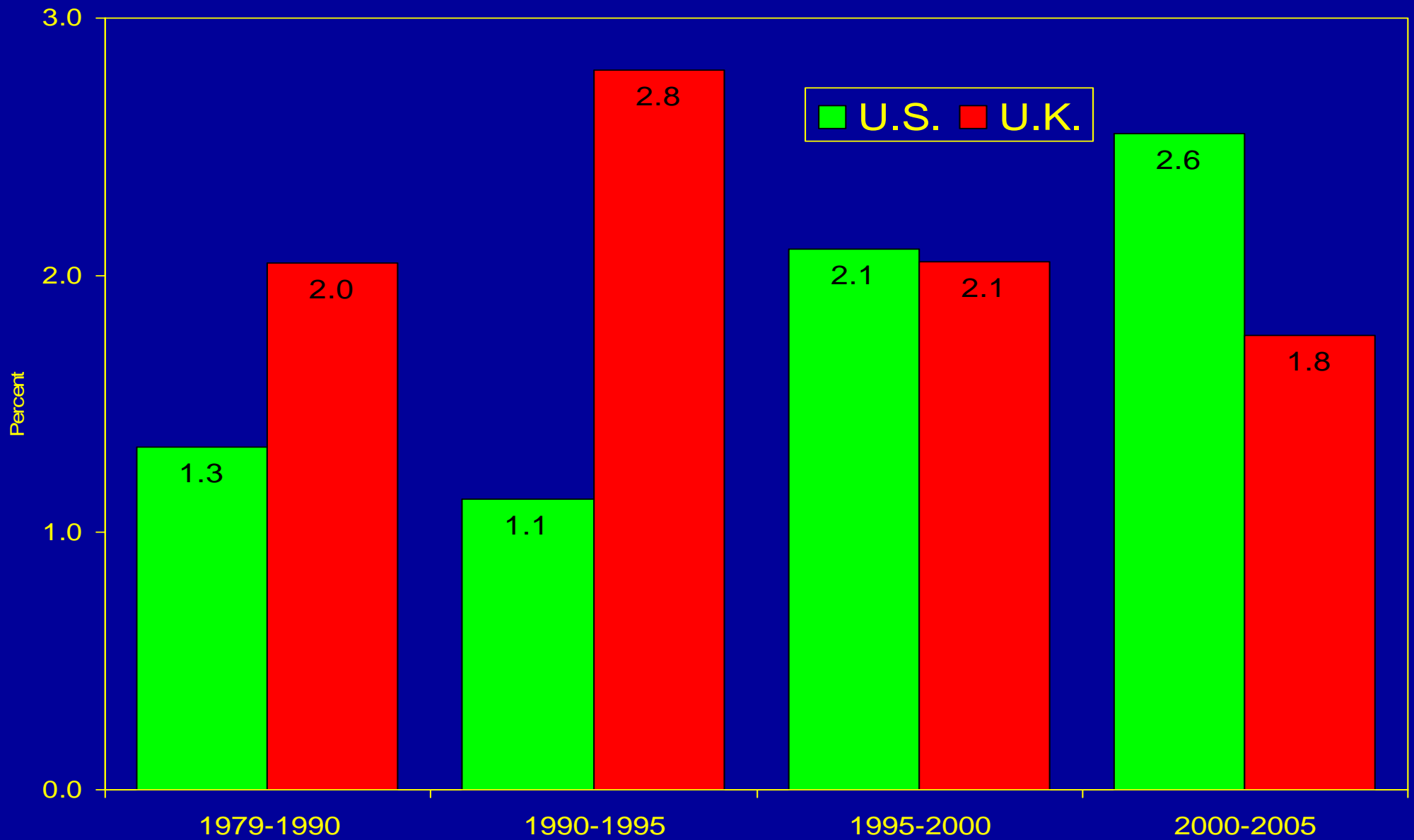
Summary

- **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

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

U.K.	1979-1990	1990-2000
Total	2.62	3.46
Within	2.58	3.67
Reallocation	0.04	-0.21

Source: Oulton and Srinivasan, Table 6.3.

$$\hat{Q} = \sum s_i \hat{Q}_i + \left(\sum s_i \hat{H}_i - \hat{H} \right)$$

U.S.	1988-1995	1995-2000	2000-2004
Total	1.31	2.26	3.06
Within	1.62	2.44	2.85
Reallocation	-0.31	-0.18	0.21

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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