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Labor productivity in the United States and the United Kingdom during the nineteenth century

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Abstract

A number of writers have recently questioned whether labor productivity or per capita incomes were ever higher in the United Kingdom than in the United States. This paper focuses on aggregate and sectoral labor productivity in the two countries during the nineteenth century. We build on earlier work by Broadberry to push comparative productivity estimates back to 1840 based on a time series projection from a 1910 benchmark and checked against a benchmark estimate for 1850. The results indicate that labor productivity in agriculture was broadly equal in the two countries, and that the United States had a substantial labor productivity lead in industry as early as 1840, while the United Kingdom was ahead in services. Hence aggregate labor productivity and per capita incomes were higher in the United Kingdom in the mid-nineteenth century, particularly since the United States had a larger share of the labor force in low value-added agriculture and a smaller share of the population in the labor force.

JEL classification: N10; N30; O47; O57

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1. Introduction

A number of writers have recently questioned whether labor productivity and per capita incomes were ever higher in the United Kingdom than in the United States (Prados de la Escosura, 2000; Ward and Devereux, 2003). Although previous work by Broadberry (1998) calculated sectoral differences in output per worker in the United Kingdom and the United States from 1870 to 1990, and found that U.S. overtaking occurred during the 1890s, this work was based on time series projections from a 1937 benchmark. That study was able to check the time series projections against a sectoral benchmark for 1910, but no attempt was made to provide any additional checks for the nineteenth century.

This paper addresses more directly the issue of comparative productivity levels in the United Kingdom and the United States during the nineteenth century. Using a time series projection from a 1910 benchmark, and a new 1850 benchmark as an additional cross-check, this paper builds on the earlier work of Broadberry (1997, 1998) by pushing back the comparative productivity estimates to 1840. We provide results for the period from 1840 to 1910 for the overall economy and for three main sectors—agriculture, industry, and services—as well as a more detailed breakdown of industry into manufacturing, mining, and construction. However, due to limitations in the pre-1870 data, we provide a more detailed breakdown of comparative productivity in the service sector (transport and public utilities, distribution, other private services and government) only for the period 1870–1910.

We show that although the United States already had a substantial labor productivity lead in industry as early as 1840, especially in manufacturing, labor productivity was broadly equal in the two countries in agriculture, while the United Kingdom was ahead in services. Hence aggregate labor productivity was higher in the United Kingdom, particularly since the United States had a larger share of the labor force in low value-added agriculture. U.S. overtaking occurred decisively only during the 1890s, as labor productivity pulled ahead in services and the share of agricultural employment declined substantially.

In addition, the proportion of the population in the labor force was higher in the United Kingdom than in the United States, reinforcing the U.K.'s per capita income lead that resulted from its labor productivity advantage in the mid-nineteenth century. The rise in the share of the population in the U.S. labor force after 1880, as well as the improvement in overall labor productivity, enabled the United States to attain per capita income leadership early in the twentieth century.

The paper has important implications in addressing the claims of Ward and Devereux (2003) that the time series projections of Maddison (1995, 2001, 2003) are inevitably subject to very large index number problems. If this were the case, then the quantitative basis of all comparative economic history would be seriously undermined, since benchmarks can never be available for more than occasional years. Fortunately, the finding that the 1850 benchmark is quite consistent with the time series projections from the 1910 benchmark means that the index number problems remain within relatively small bounds.