1 Introduction and overview

1.1 Introduction

In a previous book, I argued that there was little change in the comparative productivity performance of UK manufacturing between the mid-nineteenth century and the late twentieth century (Broadberry, 1997a). In both 1870 and 1990 US labour productivity in manufacturing was about twice the British level, while German labour productivity in manufacturing was about the same as in Britain. I also noted that value added per employee varied between manufacturing and the rest of the economy, and that the size of the manufacturing sector differed across countries and over time. This meant that it was still possible for manufacturing to have contributed to Britain's relative economic decline, through, for example, greater de-industrialisation than in Germany (Broadberry and Crafts, 2003). Nevertheless, the central message of *The Productivity Race* was surely that, to understand the relative decline in British productivity and living standards since the mid-nineteenth century, it is necessary to understand what happened in services.

This book is an attempt to set out the story of Britain's productivity performance in services, focusing in particular on market services. Part I begins by establishing the comparative productivity trends in services, and fitting them into the patterns for the whole economy. I show that comparative productivity trends in services, unlike those in manufacturing, do mirror comparative productivity trends in the whole economy. In about 1870 Britain had a labour productivity lead in services over both the United States and Germany, and this was an important factor in explaining Britain's overall labour productivity leadership at this time. However, the United States overtook Britain in both services and the whole economy before World War I and continued to forge ahead until after World War II, since when Britain has been narrowing the gap slowly. Germany overtook Britain in both services and the whole economy during the 1960s, and continued to forge ahead until the 1980s. Furthermore, Britain's loss of labour productivity leadership in services was not due to trends in public or non-market services, where it is difficult to measure output independently of inputs. Rather, it reflected US and German overtaking in private or market services.

Providing a framework to explain this comparative productivity performance in services is the task of Part II. The central theme concerns the 'industrialisation' of market services, which involved the transition from customised, low-volume, high-margin business organised on the basis of networks to standardised, high-volume, low-margin business with hierarchical management. As with the related introduction of 'mass production' in manufacturing, the industrialisation of services led to sustained growth of labour productivity. However, the gains from the introduction of the technology and organisation of industrialised service provision varied by sector and over time. Understanding the differential spread of industrialised service provision in the United Kingdom, the United States and Germany is crucial to understanding the patterns of comparative productivity performance in services. High-volume methods were quick to diffuse in sectors where (1) the level of demand was sufficiently high to permit a high degree of specialisation, (2) consumers were prepared to accept a high degree of standardisation of provision, (3) the labour force had appropriate levels of education and skill, (4) workers were willing to accept the required intensification of effort and monitoring and (5) the sector was sufficiently open to competition.

Part II is concerned largely with trends in the market service sector as a whole. However, since there was a great deal of variation in comparative productivity performance across different parts of the service sector, it is important to see how the explanation works at a finer level of disaggregation. The detailed sectoral studies in Part III help to provide a sense of balance to the issue of British relative decline, since it includes success stories as well as failures. There seems little doubt that the literature on Britain's long-run economic performance had become excessively pessimistic by the 1980s, and that writers such as Supple (1994) were correct to note that Britain has clearly remained part of the rich world. However, it is important not to overstate this point, as in the work of Rubinstein (1993) or Booth (2001). At the end of the twentieth century Britain still had a lower level of GDP per employee than either the United States or Germany, and this reflected lower labour productivity in services, which dominated economic activity.

1.2 Comparative productivity in services

Chapter 2 examines the contribution of services to the productivity performance of the whole economy in an international comparative framework. Comparative labour productivity figures are provided for

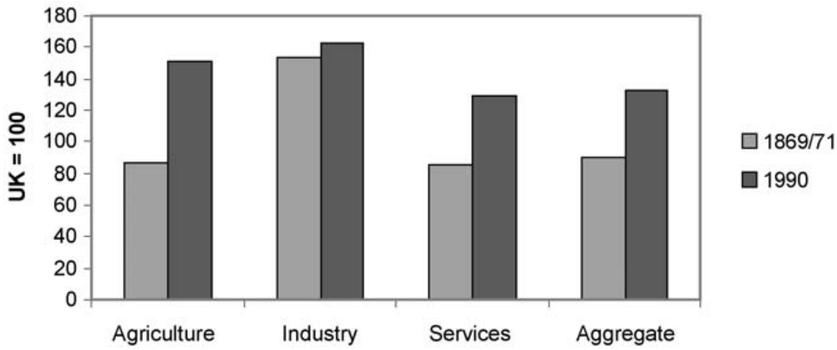

Figure 1.1 Comparative US/UK labour productivity levels by sector.
Source: Derived from table 2.1.

the economy as a whole and for a three-sector breakdown into agriculture, industry and services. Dealing first with the US/UK comparison in figure 1.1, whereas around 1870 US aggregate labour productivity stood at approximately 90% of the British level, by 1990 this had risen to 133%. Turning to the sectoral breakdown, it is clear that this owed little to developments in industry, where the US/UK comparative labour productivity level remained relatively unchanged between 1870 and 1990. Furthermore, although comparative labour productivity in agriculture changed in the right direction and by a substantial amount, it is important to remember that, whereas agriculture accounted for 50% of US employment in 1870, it accounted for less than 3% in 1990. The most important development in understanding Britain's loss of overall labour productivity leadership was, therefore, the US overtaking in services.

Similarly, figure 1.2 shows the importance of developments in services to the German overtaking of Britain. In 1871 German aggregate labour productivity was approximately 60% of the British level, but by 1990 this had risen to approximately 125%. Although there was some increase in Germany's comparative labour productivity position in industry, from about 92% of the British level in 1871 to 111% in 1990, the most important factor in the German overtaking of Britain was the much greater increase in Germany's comparative labour productivity position in services, from approximately 63% of the British level in 1871 to 135% in 1990. As in the US/UK case, there was a dramatic decline in the share of the labour force employed in agriculture in Germany, so that the increase in Germany's comparative labour productivity position in agriculture was of relatively minor significance for Germany's improving comparative labour productivity position in the economy as a whole.

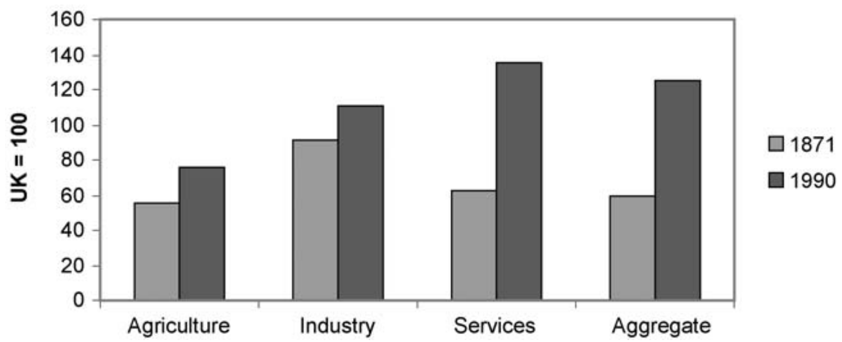

Figure 1.2 Comparative Germany/UK labour productivity levels by sector.
Source: Derived from table 2.2.

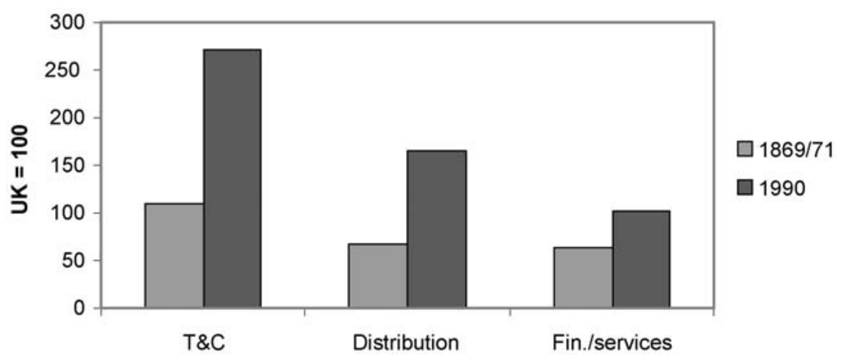

Figure 1.3 Comparative US/UK labour productivity levels in services.
Source: Derived from table 3.1.

Chapter 3 provides a breakdown of the comparative labour productivity performance of services, focusing attention on the key market service sectors. British performance tended to be worst in transport and communications and best in finance, with performance in distribution between the two. Figure 1.3 shows this situation for the US/UK case around 1870 and 1990. For the Germany/UK case, in figure 1.4, the picture is complicated by the fact that the historical data for distribution and finance in Germany are available only on a combined basis. The German performance was better in transport and communications than in distribution and finance combined.

Part I is rounded off in chapter 4 with the provision of a complete sectoral data set for the UK, US and German economies covering the

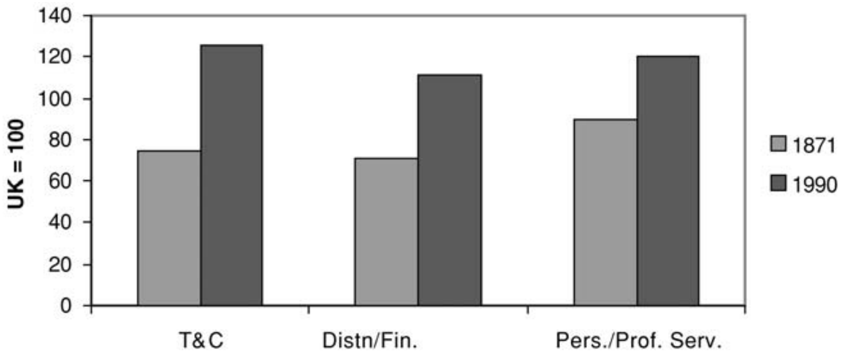

Figure 1.4 Comparative Germany/UK labour productivity levels in services.

Source: Derived from table 3.3.

period 1870 to 1990. Whereas the data in chapters 2 and 3 are presented on the basis of comparative levels of labour productivity, chapter 4 allows an investigation of the growth of labour productivity in each country. This provides a helpful reminder that, although Britain has undergone relative decline since the mid-nineteenth century, this has nevertheless been accompanied by a dramatic rise in labour productivity and living standards. Although the United States and Germany have achieved an even more dramatic growth of labour productivity, Britain's performance has been relatively successful when compared against the labour productivity performance of Asian countries such as India or China, or once rich nations such as Argentina (McCloskey, 1990: 47).

1.3 Technology and organisation

1.3.1 Innovation and the industrialisation of services

Part II provides an analytical framework to explain the patterns of comparative productivity performance outlined in Part I. Chapter 5 draws upon the work of Broadberry and Ghosal (2002, 2005) to examine the 'industrialisation' of services. This involved the transition from a world of customised, low-volume, high-margin business organised on the basis of networks to a world of standardised, high-volume, low-margin business with hierarchical management. This transformation from the world of the 'counting house' to the world of the 'modern office' depended on technologies to improve communications and information processing. The transition began in the United States, and was slower to diffuse in Britain, largely as a result of lower levels of education and stronger labour force resistance to the intensification of the labour process that the efficient utilisation of the new technologies required.

This explanation is consistent with the observed pattern of comparative US/UK labour productivity levels, since these high-volume methods diffused more rapidly in the sectors where Britain's productivity gap was largest. These methods were first developed on the railways, then spread quickly to other parts of the transport and communications sector, including steamship lines, urban traction systems and the telegraph and telephone systems (Chandler, 1977: 189–203). However, in distribution, there were limits to the degree of centralisation and standardisation that consumers found acceptable, and there were also constraints on competition which acted to support small retail outlets (Hall et al., 1961: 131–8; Field, 1996: 27; McCraw, 1996). In banking and finance, there were obvious dangers in adopting a high-volume, impersonal, standardised approach, since asymmetric information and trust are very important in this sector, while regulation also restrained the growth of large-scale banking (White, 2000: 749).

Although this book focuses on transport and communications, distribution and finance, Bakker's (2001) study of the entertainment sector is suggestive of how the approach can be applied to other personal services, where output is often less well measured in the national accounts. The industrialisation of the entertainment sector via recorded music and films dramatically raised the productivity of individual entertainers by extending the audience that could hear or see a performance. Achieving this high productivity, however, required the use of new technology and massive reorganisation of the entertainment sector. The large homogeneous home market held out the prospect of high returns to such a transformation in the United States.

The issue of market demand is also helpful in understanding the contrast between Britain and Germany in the late nineteenth century – and, indeed, much of the twentieth century. For, although the population of Germany was a little higher than that of the United Kingdom for much of this period, large parts of the German service sector remained more spread out in a much more rural society with a large agricultural sector. Britain's relatively high level of urbanisation, together with a more international orientation in much of the commercial service sector, generated external economies of scale, which underpinned high levels of productivity.

1.3.2 Investment in physical and human capital

Chapter 6 examines the investment in physical and human capital required to reap the benefits of the industrialisation of services. Sectoral data on physical capital are available for services on only a very limited basis before World War II, particularly on an internationally comparable basis. The available data utilised here suggest some role for physical capital in explaining the sectoral labour productivity gaps, but still leave substantial total factor productivity (TFP) gaps that require explanation. A closer look at sales of office machinery suggests a substantial US superiority in this crucial aspect of investment in high-volume service provision.

Turning to human capital, it is important to consider both education and vocational training, and to distinguish between higher-level (university degree) and intermediate-level (between secondary school leaving and degree) vocational training (Prais, 1995: 17). Both Germany and the United States had a general educational advantage over Britain for most of the nineteenth century, with the laggard Britain achieving universal primary education only towards the end of the century. Between the wars the United States moved to universal secondary education, which was only achieved in Britain and Germany after World War II. At this point, the United States moved to mass higher education, a point arrived at in Britain and Germany only in very recent years. It may be expected that differences in education would be more significant for services than industry, since the 'three Rs', of reading, (w)riting and (a)rithmetic, are of more direct relevance to the clerical work typical of commercial services throughout this period. There may also be a general advantage arising from high levels of education that goes beyond the specific knowledge taught in class, with pupils learning social skills, teamwork and flexibility (Goldin, 2001). This appears to be what Abramovitz (1986) had in mind when seeing education as a key measurable indicator of the 'social capabilities' of nations.

However, the apparent British and German disadvantage in formal education for much of the twentieth century was offset by a much greater provision of vocational training than in the United States (Broadberry, 2004a). Here, however, there was a difference of emphasis between the higher and intermediate levels in the two countries. Britain led in the provision of higher-level training through membership of professional organisations, particularly before World War II, and many of these professionals worked in the service sector. Germany developed an impressive system of intermediate-level training through apprenticeship, and, although this was initially focused on industry, it was extended into service sectors, particularly after World War II.

Putting together the different types of human capital formation, it is likely that Britain suffered little human capital disadvantage relative to either Germany or the United States before World War II, especially in services. However, after World War II any higher-level advantage that Britain had enjoyed over the United States in services from the large number of qualified members of professional associations was offset by the spread of mass higher education in the United States. In the comparison between Britain and Germany, by contrast, the crucial development was the spread of intermediate-level qualifications in German services, leading to the emergence of a substantial German human capital advantage by the 1970s.

1.3.3 Competition and the institutional framework

Chapter 6 focuses on the proximate causes of the changing comparative productivity performance in services, highlighting relatively low rates for the accumulation of physical and human capital in Britain. This, however, merely raises the issue of why rates of accumulation were low, and chapter 7 examines competition and the institutional framework. To see the importance of these factors, consider first why changing comparative productivity in services has contributed more than changing comparative productivity in industry to the explanation of changing comparative productivity performance overall. The reason for this is that services have typically been more sheltered from competitive pressures than industry. Although there have also been periods when protection and regulatory policies have slowed down the exit of inefficient firms in industry, in the long run competitive forces have acted more effectively in industry than in services. In much of the service sector, competition from providers located abroad is impossible, while, in other parts, firms typically have to obtain licences to operate and are required to submit to a high degree of official regulation. In these heavily regulated sectors, collusion between providers has been common. Whereas British manufacturers that failed to keep up with productivity growth abroad were ultimately replaced by imports, there was no such possibility of replacing the bulk of Britain's service providers. Hence, poor performance by service sector firms tends to show up in the productivity figures, while poor performance by industrial firms tends to show up in the sectoral composition of economic activity.

Different approaches to the competitive environment can also be seen as having an important effect on the relative size of sectors in the different economies, with knock-on effects for productivity performance. The different attitudes of Britain and Germany to the protection of agriculture before World War II illustrate this point effectively. Tariff protection in late nineteenth-century Germany was designed to slow down the decline of agriculture and accelerate the development of heavy industry. The alliance of 'rye and iron' in the newly formed German Reich meant that proportionally, at least, services had to be the loser. While German agricultural tariffs staved off a 'grain invasion' from the United States, and retained workers in a low-value-added activity, British free trade meant that consumers benefited from cheap imported food and had more income to spend on services, which could be provided more efficiently on a larger scale.

More fundamentally, different institutional frameworks affect the incentives to accumulate and innovate. Whereas US governments have generally taken a strongly pro-competitive stance since the emergence of large-scale modern business enterprise in the late nineteenth century, British and German governments have been more equivocal. Before World War II cartels were widely accepted in Germany, and British policy can at times be described as pro-trust rather than anti-trust, particularly during the inter-war period (Lucas, 1937; Broadberry and Crafts, 1990). After World War II corporatist post-war settlements provided very different incentives for the accumulation of physical and human capital in Germany and Britain (Eichengreen, 1996; Bean and Crafts, 1996). Although both Britain and Germany were more 'corporatist' than the United States, the greater centralisation of unions and employers' organisations in Germany provided stronger incentives for the accumulation of human and physical capital than in Britain (Carlin, 1996). First, the greater degree of centralisation in Germany facilitated a collective solution to the free-rider problem in vocational training. Second, decentralised labour market organisations in Britain made it harder to deliver on agreements concerning investment in new technology and wage restraint (Bean and Crafts, 1996; Olson, 1982; Crouch, 1993).

During the 1980s the institutional framework in Britain shifted decisively in the direction of promoting competition, with a toughening of anti-trust policy, the privatisation and deregulation of a number of important services, and limitations on trade union immunities. Britain's relative economic decline was at last stemmed, though not yet decisively reversed.

1.4 Sectoral studies

Part III provides a more detailed study of the individual sectors. As well as examining the time series evidence on the growth of output, inputs and productivity by sector, and the cross-sectional benchmark estimates of comparative productivity at a highly disaggregated level, this section surveys the substantial secondary literature and offers a reinterpretation of the performance of British market services by integrating the different types of evidence. This section is divided into three main chapters, covering the periods 1850–1914, 1914–1950 and 1950–1990, together with a shorter preliminary assessment of the 1990s.

1.4.1 The 'golden age' of British commerce, 1850–1914

Chapter 8 presents a systematic assessment of the performance of the major British market service sectors in international perspective between the mid-nineteenth century and World War I. In the mid-nineteenth century Britain had the highest level of per capita income in the world, and this was underpinned by a high level of labour productivity, particularly in services (Broadberry and Irwin, 2006). Although productivity growth in services was more rapid in the United States and Germany before World War I, this can be seen in many sectors as part of a process of catching up. To some extent the process of catching up was inevitable, as the release of labour from the agricultural sector in rapidly developing countries such as the United States and Germany led to a catching up in the extent of urbanisation, with concentrated urban demands allowing a high degree of specialisation in market services (Smolensky, 1972). Since services also made a substantial positive contribution to the British balance of payments, and the services of the City of London dominated world trade and payments, the period between 1850 and 1914 can be seen as the 'golden age' of British commerce (Imlah, 1958; Kynaston, 1995).

However, there were clearly some developments in the United States which threatened Britain's dominant position in internationally traded services, and Britain's productivity leadership across a broad spectrum of services. These developments have been labelled the 'industrialisation' of services, with a move from customised, low-volume, high-margin business organised on the basis of networks to standardised, high-volume, low-margin business organised on the basis of hierarchy. This approach to business originated in the United States, and has been identified as a major source of US competitive advantage by Chandler (1980). However, whereas in his later work Chandler (1990) concentrates on the emergence of the large-scale, hierarchical corporation in manufacturing, his earlier work emphasises the role of a number of service sectors, including the railways and distribution (Chandler, 1977). The key factors underlying the growth of hierarchical forms of organisation in the service sector before World War I were (1) developments in information and communications technology (ICT), reducing problems of asymmetric information and allowing much closer contact