

THE THIRD NOEL BUTLIN LECTURE: AUSTRALIAN EXCEPTIONALISM REVISITED

BY DOUGLAS A. IRWIN*
Dartmouth College

In the late-nineteenth century, Australia had one of the highest levels of income per capita in the world. Over the twentieth century, Australia's exceptional position declined as its high labour force participation rate and male-skewed gender ratio gradually aligned with other countries. A similar reversion occurred in the other important components underlying Australia's high productivity, such as work hours. As the structure of the economy shifted away from a reliance on agricultural and towards manufacturing, Australia's protective attitude and restrictive business practices may have exacerbated its loss in productivity. Considerable research remains to be carried out to confirm these views.

JEL categories: O10, O47, N10, N17, N30

Keywords: per capita income, productivity, work hours

INTRODUCTION

Every student of Australian economic history knows that the country probably enjoyed the world's highest per capita income in the late-nineteenth century, a fortunate state often attributed to midas and the merino.¹ I would like to use this occasion to discuss some recent work on Australia's relative income position in the late-nineteenth and early-twentieth centuries that updates Butlin's own overview and McLean's recent, broad historical perspective on economic growth in Australia.² This recent work gives us a new perspective on the period and indicates future directions for research as well.

* This paper draws on my joint work with Stephen Broadberry and I am grateful to him for our collaboration. I wish to thank Jonathan Pincus and Diane Hutchinson for helpful references.

1 Schedvin, Midas and the merino.

2 Butlin, Some perspectives; McLean, Australian economic growth.

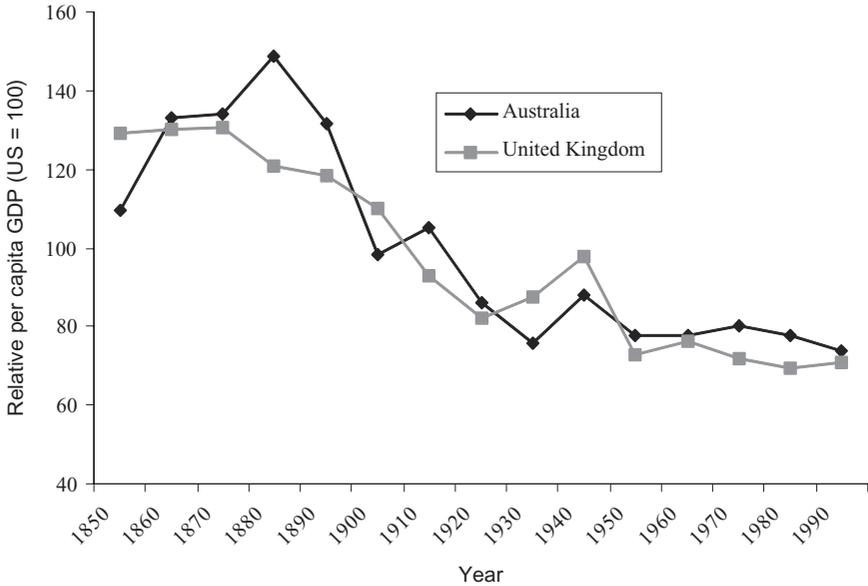


Figure 1. Relative per capita GDP, Australia and the UK.

Source: Maddison (2001), appendix D.

Figure 1 depicts the situation as we understand it from Angus Maddison's data on per capita GDP by decade from 1850 to 1990.³ This figure shows that, for three to four decades after 1860, Australia and the UK enjoyed much higher per capita income relative to the USA. Australia even enjoyed the unusual position of having a higher income than the UK during the 1870s and 1880s, but then reconverged with the UK after the depression of the early 1890s. However, after 1870 for the UK, 1880 for Australia, their position relative to the USA began to slide. By 1910, the USA surpassed both countries in terms of per capita income, and this has been the situation ever since.

Stephen Broadberry has studied in detail the factors behind the 'productivity race' between the USA and the UK from the 1870s to the present day.⁴ If we include Australia in the mix, the sources of its early exceptional position, and the reasons why this exceptionalism was eventually lost, are important phenomena to be explained.

BUT WAS THERE AUSTRALIAN EXCEPTIONALISM?

Despite the entrenched view among economic historians that Australia enjoyed an exceptionally high real-income position in the late-nineteenth century, this

³ Maddison, *The World Economy*.

⁴ Broadberry, *Market Services*.

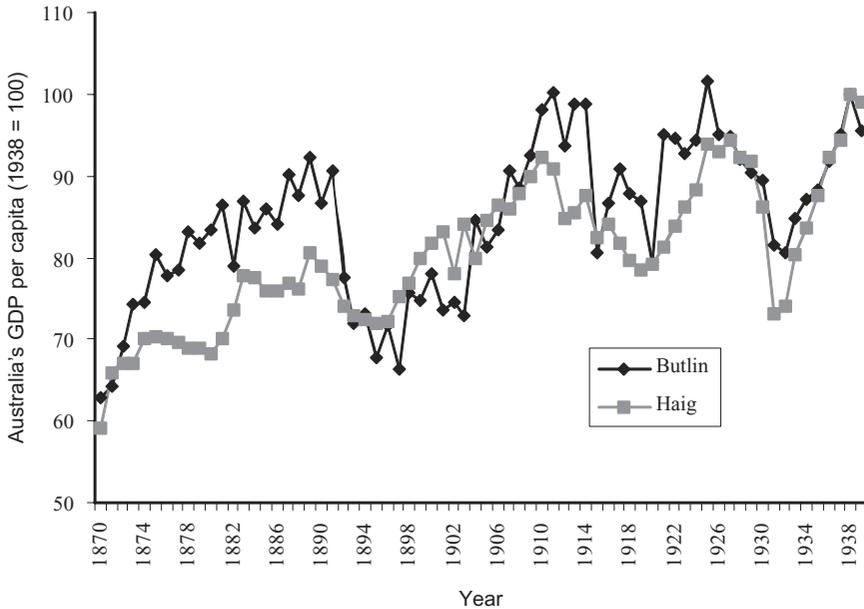


Figure 2. Butlin versus Haig on Australia's real GDP per capita, 1870–1939.

Source: Butlin (1962), Haig (2001) and Maddison (2001) for population.

consensus has been recently challenged in two ways. The first challenge comes from Bryan Haig's reformulation of Australian GDP, and the second from Leandro Prados de la Escosura's reworking of the historical income statistics.⁵ Before we can proceed, we must address these doubts to see whether there actually was any Australian exceptionalism that needs to be explained.

Haig notes that many individual components of the Butlin GDP figure were criticised when they were first published, and that the underlying Butlin data have not been updated or improved to reflect those criticisms. In addition, questions have been raised about the quality of the price deflators used to produce the Butlin real GDP series. Rather than rework the Butlin figures, Haig compiled new estimates of aggregate output derived in large part from quantity measures of output and measures of industry employment (relying less on nominal values that require deflation). The figures are presented as an alternative to the standard Butlin series.

Figure 2 presents the two competing series. While there are broadly similar after 1900, there is a key difference before that year: in the Haig figures, there is no boom in the 1870s and there is no bust in the 1890s. The Haig series implies that Australia did not enjoy a substantial superiority in income vis-à-vis other

5 Haig, *New estimates of Australian GDP*; Prados de la Escosura, *International comparisons*.

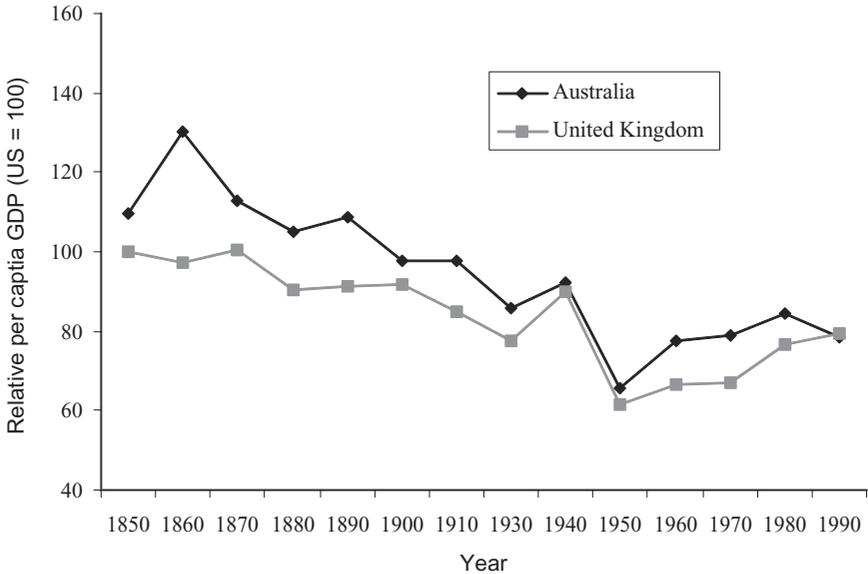


Figure 3. Alternative measure of Australian and UK relative per capita GDP.

Source: Prados de la Escosura (2000).

major countries in the late-nineteenth century. If these calculations are correct, then the historiography of the Australian economy requires a major rewriting.

The second challenge comes from Leandro Prados de la Escosura.⁶ He departs from the Maddison approach of finding a recent benchmark year, using purchasing power parity (PPP)-adjusted price ratios to convert a country's GDP into dollars, and then projecting the benchmark back in time via index numbers of GDP in constant domestic prices. Instead, Prados de la Escosura obtains short-cut historical PPPs via regression analysis and compares per capita incomes in current values at various points in the past.⁷ He does this by regressing known PPPs for the post-World War II period onto a variety of variables, such as nominal per capita income, the ratio of commodity exports and imports to GDP, the current account balance, population, and land area. He then uses the estimated coefficients of the regressions, along with actual values of the explanatory variables for decades in the nineteenth century, to predict PPP exchange rates for those past decades.

The results of this exercise are presented in Figure 3. According to these findings, there is no significant difference in the per capita incomes of these three

6 Prados de la Escosura, International comparisons.

7 An alternative way is to calculate direct PPP comparisons in the past, as Ward and Devereux (Measuring Britain's Decline) have done for the USA and the UK. See Broadberry, Relative per capita income levels, for a critique.

countries in the late-nineteenth century. Australia enjoys a significant lead in income in the 1850s, as a result of the gold rush, but by 1880, Australian incomes are only slightly above those in the USA. Like Haig, Prados de la Escosura finds no Australian exceptionalism. Furthermore, according to these results, the UK never had higher income than the USA in the late-nineteenth century. If this approach yields an accurate estimate of past PPP exchange rates, then the results imply that the time-series projections may be unreliable. Once again, if these calculations are correct, then the historiography of the Australian economy requires a major rewriting.

Unfortunately for the challengers, their conclusions must be taken with a great deal of scepticism. The disappearance of any significant late-nineteenth-century difference in per capita income between Australia and the UK is problematic. The suggestion that Australia had a relatively high per capita income in the late-nineteenth century stretches back at least as far as Mulhall, who in 1899 reported values for national income per head around the year 1890 for 14 European and 4 New World countries.⁸ He estimated that Australia had a 19.3 per cent per capita income lead over the UK. Similarly, Clark reports calculations on real product per worker around 1890 that give Australia a lead of 25.4 per cent over Great Britain.⁹

Furthermore, Australia's income superiority is apparently confirmed by cross-checks on the Maddison time-series projections by an independent benchmark estimate of comparative Australia/UK per capita incomes in the late-nineteenth century based on expenditure data. Drawing on calculations of expenditure and prices in Victoria and New South Wales by the official statistician, T.A. Coghlan, Thomas finds Australian GDP per capita was 41.2 per cent above the UK level in 1891.¹⁰ Thomas concludes: 'In the most straightforward terms, Australia was clearly the most prosperous country in the world in 1891. . . . Had we examined the peak year of 1889 we would have found an Australian economy even more buoyant relative to the rest of the world (with real consumption gaps perhaps twice as large)'.¹¹ This would be difficult to reconcile with either an Australian lead of 8.5 per cent in the Prados de la Escosura backcast or an Australian lead of 2.7 per cent in the Haig time-series projection, but is not too far from the 24.3 per cent point lead implied by the Butlin series.¹²

In addition, Allen used detailed consumer price data to adjust national incomes across several English-speaking countries for differences in costs of living in the

8 Mulhall, *Dictionary of Statistics*.

9 Clark, *The Conditions of Economic Progress*.

10 Thomas, A substantial Australian superiority?

11 Thomas, A substantial Australian superiority?, p. 31.

12 Furthermore, a similar expenditure-based calculation conducted by Haig, International comparisons, with access to Coghlan's papers, found an Australian per capita GDP lead in 1891 of 36 percentage points, or around 10 per cent higher than the time series projection using the Butlin series.

late-nineteenth century.¹³ He found that consumer real incomes were about one-third higher in Australia than in the UK in the 1880s, and that real wages in Australia were also very high by international standards during the same period. As Allen notes, ‘The most impressive feature of the Australian wage series is the high level prevailing in the 1880s. Labourers in Sydney received a wage double that prevailing in Manchester, Chicago, or San Francisco. . . . If labour and capital markets were perfectly integrated, then real wages . . . and the high average income generated by the Australian boom of the 1870s and 1880s would have accrued solely to the owners of land. The lack of labour market integration meant that the benefits of growth were shared among the working class, especially among the least skilled’.¹⁴

Thus, several different authors using different approaches have produced independent estimates of high levels of per capita income in Australia during the late-nineteenth-century boom. The lack of any significant Australian lead vis-à-vis the UK in Haig’s data or in the Prados de la Escosura approach ultimately makes it difficult to accept their figures over Butlin’s.¹⁵

In terms of the Australian data, a further reason to prefer Butlin’s data over Haig’s concerns the economic depression that started in 1891. As McLean observes, ‘There has been ample recognition in the literature that the Australian depression [of 1891–93] was both deep and prolonged’.¹⁶ Yet according to Haig’s data, real GDP declined by just 1.6 per cent between those years, whereas real GDP declined 17 per cent according to Butlin’s calculations. This small blip in the Haig series is enormously inconsistent with other data that point to the severity of the period. The Haig series is hugely out of line with the 26 per cent decline in real imports between 1891 and 1893 reported in Boehm, and the similar fall in other indicators, such as the 21 per cent drop in per capita consumption of beer.¹⁷ They are also hard to reconcile with Rankin’s observation that New Zealand experienced a net inflow of migrants from Australia during the early 1890s.¹⁸

In short, there seems to be little doubt that Australia enjoyed high levels of real income and expenditure per head up to the depression of 1891. Despite this conclusion, many of Haig’s concerns about Butlin’s data are correct and the use of data on production quantities is commendable. I am not familiar enough with the underlying data to judge what should be done, but there is clearly an opportunity for an enterprising economic historian to reassess Australia’s GDP statistics prior to 1948.

13 Allen, *Real incomes in the English-speaking world*.

14 Allen, *Real incomes in the English-speaking world*, p. 121.

15 In the case of the Prados de la Escosura’s projected PPP exchange rates, it could be the case that estimates based on post-World War II data simply cannot be backcast with accuracy to the late-nineteenth century.

16 McLean, *Recovery from depression*, p. 219.

17 Boehm, *Prosperity and Depression*, tables 43 and 44.

18 Rankin, *New Zealand’s GDP*, p. 64.

WHY WAS AUSTRALIA EXCEPTIONAL?

If we accept that Australia did have a remarkably high per capita income in the late-nineteenth century, McLean's survey demonstrates that economists have gone well beyond the midas and merino explanations for this fact.¹⁹ In just the past few years, after the completion of his survey, several economists have explored different facets of this issue. These different approaches draw on contemporary growth-accounting techniques and are complementary with one another. They are not competing explanations for what happened, and each reinforces the conclusions of the other.

The framework that motivates much of this work is based on the following simple equation:

$$\text{GDP/Pop} = (\text{GDP/Hours}) * (\text{Hours/Worker}) * (\text{Worker/Pop}) \quad (1)$$

which states that per capita GDP (GDP/Pop, where Pop is population) is equal to the product of labour productivity (GDP per hour), average hours worked (hours per worker), and the employment rate (worker/pop ratio). Each of these components – labour productivity, effort (average hours worked), and the employment ratio – has been the subject of recent research by economic historians and each will be discussed in turn.

Employment rate

The first component of GDP per capita is the labour force participation rate, or employment rate. It has long been recognised that the Australia's unusual demographic features played a role in its late-nineteenth-century economic performance.²⁰

McLean examines Australia's historical income performance vis-a-vis the USA by separating out the role played by labour productivity and the employment ratio.²¹ He further separates the employment ratio into two main elements: the age structure of the population (the proportion of working age men and women), and the gender ratio of the population (the ratio of men to women). The valuable aspect of McLean's decomposition is that it isolates several aspects of late-nineteenth-century Australian economic history that may be unique, particularly the high masculinity ratio due to its recent colonial origins and reinforced by the gold rushes of the 1850s and 1890s.

In studying Australia's position relative to the USA, McLean finds that at least half of the difference between Australian and American incomes prior to 1900 was due to these special features of the Australian labour market, namely, the higher male population ratio and the higher participation rate. In 1871, the proportion

19 McLean, Australian economic growth.

20 Hall, Some long period effects; Kelley, Demographic change and economic growth.

21 McLean, Why was Australia so rich?

of men in the Australian population was 4.1 percentage points higher than in the USA, and the male labour force participation was 11 percentage points higher. The former is a lagged effect of the gold rush of the 1850s, while the latter may be due to the greater urbanisation of the Australian economy in comparison with the USA.

Thus, McLean finds that Australia's labour input per capita was 25 per cent above the USA in 1871.²² According to his calculations, if Australia had a labour force participation rate equal to that of the USA in 1871, Australia's per capita income lead would have been cut in half, from 48 per cent in 1871 to 19 per cent. However, this distinctive factor of the Australian economy diminished over time: by 1911, Australia's per capita labour input was just 2 per cent greater compared with the USA. Conversely, Australia's higher income was not due to a different age distribution of the population compared with the USA; in fact, in 1871 and 1891, Australian income would have been slightly higher if it had the same age structure of its labour force as the USA. As McLean concludes: 'the relative income advantage enjoyed by Australia due to its higher labour input at this time does not derive from a favourable age distribution, but from favourable masculinity and participation rates'.²³

This conclusion rests in part on the choice of the USA as the benchmark. Figure 4 shows labour force participation rates, and shows that the unusually low labour force participation in the USA accounts for this finding.²⁴ Because labour force participation rates were higher in the UK, when compared with that country, Australia GDP per worker was even more impressive than its GDP per capita. Indeed, Australia's GDP per worker remained decisively ahead of the UK throughout this whole period.

Hours of work

The second component of GDP per capita is number of hours worked. In 1870, as Huberman has documented, the annual number of work hours was about the same in Australia and the UK.²⁵ By 1900, Australians were working 10 per cent fewer hours annually, and by 1913, they were working 17 per cent fewer hours annually. Figure 5 shows this dramatic reduction. This factor actually works against Australia's high measured income, but is a component of Australian exceptionalism.

22 McLean, *Why was Australia so rich?*

23 McLean, *Why was Australia so rich?*

24 This factor also poses a challenge for those who believe the USA had overtaken the UK in per capita income early in the nineteenth century (Prados de la Escosura, *International comparisons*; Ward and Devereux, *Measuring Britain's Decline*). In 1871, the labour force participate rate was 12–13 percentage points higher in the UK than in the USA, meaning that America's GDP per worker must have been significantly greater than the UK's, despite having a much larger share of its labour force in relatively low value-added agriculture.

25 Huberman, *Working hours of the world unite?*, table 6.

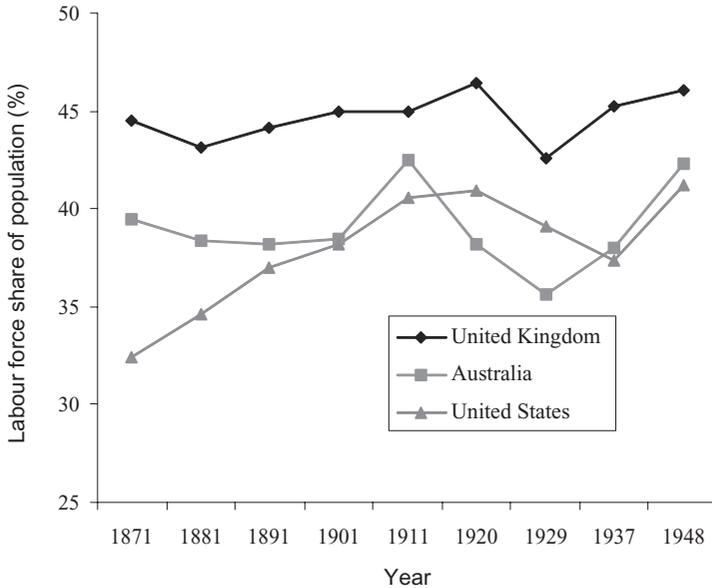


Figure 4. Labour force participation rates.

Source: Broadberry and Irwin (2007), table 7.

Taking into account the gains in leisure among Australian workers means that the relative decline in relative GDP per capita and per employee in 1901 and 1911 (in comparison with 1881 and 1891) is much less severe than commonly indicated. The implications for living standards are quite remarkable. Huberman adjusts Maddison’s data on per capita GDP in 1913 and finds that leisure-augmented income was 18 per cent higher in Australia than in the UK, as opposed to just 10 per cent higher using the standard figures.²⁶ This is shown in Table 1, which shows that Australia remained the exception on a basis of GDP per hour worked even compared with the USA. This provides an international comparative dimension to the findings of Jackson, who points out that leisure-augmented income grew faster than real product in Australia between 1889 and 1926.²⁷

However, like the participation rate, Australia was not an outlier for long in terms of hours of work. Huberman and Minns show that work hours converged again between the two countries in the 1920s and 1930s (Figure 5).²⁸ Thereafter, hours worked would no longer be a major source of difference in terms of per capita income calculations.

26 Huberman, Working hours of the world unite?, table 7.

27 Jackson, Trends in Australian living standards.

28 Huberman and Minns, House of work in old and new worlds.



Figure 5. Annual work hours, 1870–1950: Australia and the UK relative to the USA.

Source: Huberman and Minns (2005, table 3).

Table 1. Effects of hours of work on per capita GDP

	1870	1913
GDP per capita (US = 100)		
Australia	155	104
UK	133	95
GDP per hour worked (US = 100)		
Australia	162	139
UK	128	92

Sources and notes: Huberman (2004), table 7. Huberman uses data from Maddison (1995), which was subsequently revised in Maddison (2001) to show a much smaller Australian lead in 1870; see Figure 1.

Sectoral productivity

The third component of GDP per capita is labour productivity. McLean's decomposition finds that half of Australia's high income compared with the USA in the late-nineteenth century can be accounted for by distinctive aspects of its labour force characteristics (or, perhaps more precisely, the unusual low participation

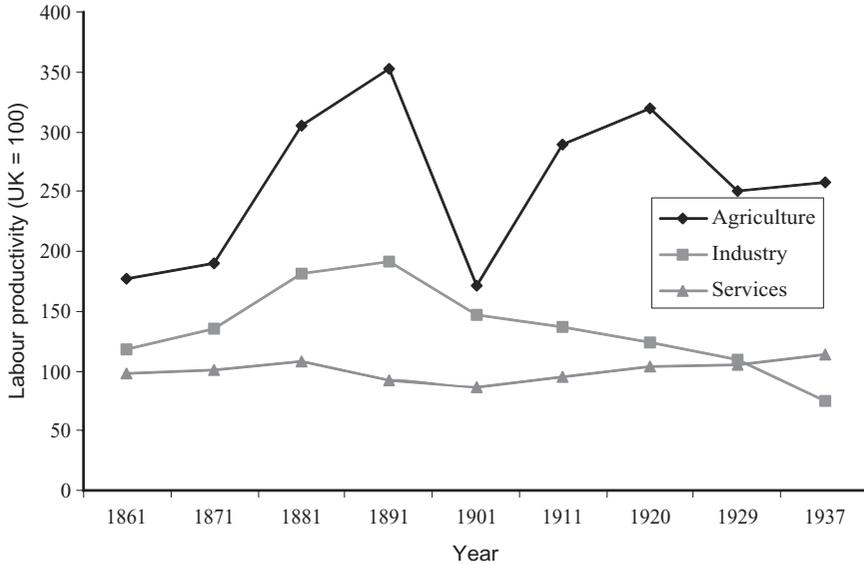


Figure 6. Australia's relative labour productivity by sector, 1861–1937.

Source: Broadberry and Irwin (2007).

rate of the American labour force).²⁹ The other half of the difference is due to Australia's higher underlying labour productivity. He sets up three hypotheses about the broad sources of the country's superior labour productivity – more capital per worker, greater schooling per worker, and greater natural resources per capita – and finds good reason to be sceptical of all three.

So what explains Australia's high labour productivity? This is where Broadberry and Irwin enter in an attempt to ascertain the relative productivity differences between Australia and the UK across different sectors of the economy.³⁰ (Note the different benchmark; see Broadberry & Irwin 2006 for a USA–UK comparison.)³¹ The overall labour productivity of a country is a function of the productivity of labour in individual sectors of the economy and the size of those sectors in terms of employment. Figure 6 shows the productivity of labour in agriculture, industry, and services in Australia relative to the UK, which is benchmarked at 100. Table 2 shows the sectoral allocation of the labour force in Australia, the UK, and the USA.

Australia's overall labour productivity lead clearly owed a great deal to agriculture. In 1861, Australia's labour productivity was nearly twice the UK level, and it rose to a peak lead of more than three-to-one in the 1880s. The productivity

29 McLean, Why was Australia so rich?

30 Broadberry and Irwin, Lost exceptionalism?

31 Broadberry and Irwin, Labor productivity in the United States.

Table 2. Sectoral shares of employment

	Agriculture	Industry	Services
Australia			
1871	28	41	31
1891	24	36	40
1911	24	36	40
1929	23	32	44
UK			
1871	22	42	36
1891	15	44	41
1911	11	44	45
1929	7	45	45
USA			
1869	53	27	21
1889	43	27	30
1909	32	30	38
1929	22	26	52

Sources: Broadberry and Irwin (2006, 2007).

advantage in agriculture was important, at least initially, because of the sizeable share of the labour force devoted to agriculture in both countries. Figure 7 shows that about a quarter of the labour force in both Australia and the UK in 1870 was devoted to agriculture, a sizeable amount. In subsequent decades, this share fell secularly in the UK while it remained steady in Australia.

As output per worker was broadly similar in US and UK agriculture during the nineteenth century, this suggests that Australia was the world's agricultural productivity leader at this time.³² The USA also differs from Australia and the UK in having an unusually large share of employment in agriculture, as Figure 7 shows. In 1880s, the USA was the outlier with more than half of its workforce still in agriculture, although this share declined rapidly in the early twentieth century and matched that of Australia in 1931.

The productivity difference across these countries seems to reflect the relative importance of high value-added pastoral and dairy farming in Australia, compared with a high reliance on low value-added arable farming in the USA. McLean also observes that whereas the USA was much more abundant in cultivated or improved cropland, Australia's endowment of this higher-quality land was greater on a per capita basis.³³ In addition, the Australian staple of wool had a high value-to-weight ratio, required little capital and labour to produce, and promoted the development of subsidiary transport and financial services.

Figure 6 also indicates that the depression and drought of the 1890s had an enormous effect on Australia's relative productivity in agriculture. Because of this

32 Broadberry and Irwin, Labor productivity in the United States.

33 McLean, Why was Australia so rich?

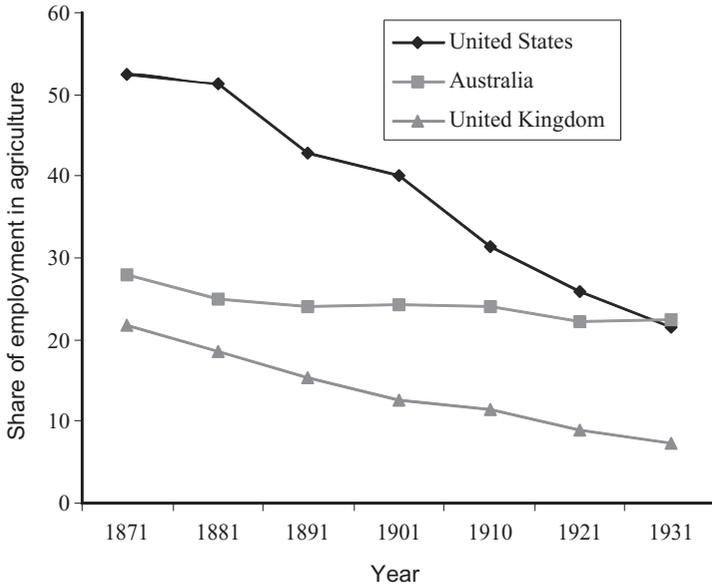


Figure 7. Share of employment in agriculture, 1871–1931.

Source: Table 2.

sharp decline, one might ask (as McLean does) whether the ‘depression may have *permanently* lowered Australian productivity levels relative to other benchmark economies’. (He notes that this ‘is not a question that has been addressed in the literature on the depression itself’.)³⁴ Figure 6 suggests that, at least in agriculture, there is little apparent structural break after 1890. Although the severe drought of the 1890s diminished Australia’s advantage in this sector, Australia’s productivity rebounded and was more than double that of the UK through the first half of the twentieth century. The merino and wheat were clearly important components of Australia’s high income.

Services will be discussed very briefly because it does not appear to be a major source of difference between the two countries. Although statistics for the service sector are notoriously suspect, the available data suggest that any difference in productivity levels between Australia and the UK was extremely small in comparison with other sectors of the economy. The relative productivity level is stable over time, as is the share of labour devoted to services production. This is true in the late-nineteenth century as well as through the interwar period.

In terms of industry, which encompasses mining, manufacturing, and construction, labour productivity was initially higher in Australia than in the UK. This probably reflected the importance of mining in Australia. The major gold discoveries in the early 1850s resulted in a huge expansion of the country’s population

34 McLean, Why was Australia so rich?

Table 3. Comparative Australia/UK labour productivity in industry, 1861–1948 (UK = 100)

	Mining	Manufacturing and utilities	Construction	Total industry
1861	118	88	130	118
1871	146	150	104	135
1881	136	170	228	182
1891	271	158	234	192
1901	299	124	140	147
1911	381	121	142	137
1920	416	99	159	124
1929	357	101	88	110
1935	200	70	73	77
1937	229	68	72	76
1948	320	71	47	82

Sources: Broadberry and Irwin (2007), table 9.

and mining industry. Gold dominated Australia's industry and exports for several decades thereafter.³⁵ In 1861, for example, mining accounted for 16 per cent of Australia's GDP, while manufacturing accounted for just 4 per cent. In the UK, by contrast, mining accounted for just 5 per cent of GDP in 1856 and manufacturing accounted for 22 per cent.

As in agriculture, the boom of the 1870s and 1880s and the slump of the 1890s show up strongly in the Butlin series for industry, although the decline in industry's relative productivity is not as serious as in agriculture. By about 1930, however, Australia's lead in industry productivity had eroded considerably, and the country fell behind the UK in overall labour productivity in the sector.

To explore the trends in industry, Table 3 breaks the sector out into three components: mining, manufacturing (including utilities), and construction. The results are also presented in Figure 8. In mining, Australia starts with a large lead that receives a boost with the Western gold discoveries around 1890. The lead peaks around 1920, but although the lead remains sizeable, by that time the mining sector had shrunk to a fraction of its former size. Rather than a decline in relative productivity, it was the shrinking size of the mining sector that contributed to Australia's decline in overall industrial labour productivity.

The decline in mining coincided with the rise of manufacturing in Australia. By 1929, the GDP shares in Australia were 1.9 per cent in mining and 18.0 per cent in manufacturing.³⁶ Although Australia had a sizeable lead in terms of manufacturing labour productivity for part of the late-nineteenth century, this advantage begins to diminish around the turn of the century. By 1920, Australian industry was at parity with manufacturing in the UK, but it was 30 per cent behind in the 1930s.

35 Maddock and McLean, Supply side shocks.

36 Butlin, *Australian Domestic Product*, pp. 12–13.

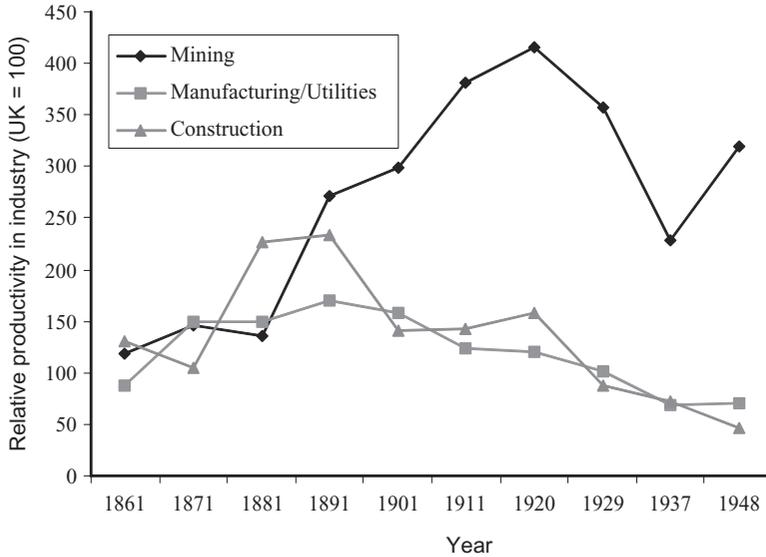


Figure 8. Australia’s relative productivity in industry, 1861–1948.

Source: Table 3.

Thus, these findings suggest that Australia’s productivity advantage in industry may have been the product of natural resource endowments, and that the relative decline in its advantage is related to the shift of resources into manufacturing and the relative decline in its manufacturing productivity.

With regard to natural resources, Australia managed to avoid the natural resources curse. David and Wright caution against regarding natural resource endowments as simply good fortune that required no entrepreneurship, because they do need to be discovered and ways of extracting them need to be adapted to specific local conditions.³⁷ McLean notes that well-defined property rights and the provision of public goods were critical to the successful discovery and exploitation of natural resources.³⁸ La Croix examines how the redesign of institutional arrangements in the mining industry helped ensure that the resources contributed to broader economic growth rather than rents accruing to just a limited segment of the population.³⁹

Yet Australia was not as successful as the USA in building up a high-productivity resource-intensive manufacturing sector. In part, this may be due to the greater tradability of Australia’s resource base, which was exported in its raw form.⁴⁰ By contrast, in the USA many minerals (such as iron ore) were effectively

37 David and Wright, *Increasing returns*.

38 McLean, *Australian economic growth*, p. 339.

39 La Croix, *Property rights and institutional change*.

40 McLean, *Why was Australia so rich?*, figure 5.

non-tradable due to their location, so that they instead became embodied and exported in the form of final goods, such as iron and steel manufactures.⁴¹

With regard to manufacturing productivity, the findings of Broadberry and Irwin demand further research.⁴² Why did the relative productivity of Australian manufacturing decline fairly continuously from 1890? Was the decline due to the differing composition of industries within manufacturing, or were similar industries falling behind? The answers to such questions are beyond the scope of this paper, but some hints about possible avenues to be explored can be gleaned from the secondary literature.

The role of tariffs and trade policy undoubtedly come to mind in seeking to explain these trends. The fact that Australia fell significantly behind in industry as manufacturing became more important than mining suggests that policies to protect Australian manufacturing may have had an adverse impact on Australia's overall productivity and living standards.⁴³ Australia's import tariffs rose gradually during the 1920s but much more sharply in the early 1930s, about the time that Australia's relative productivity performance in manufacturing deteriorated below the UK level.

The tariff could have adversely affected Australia's overall relative income position in several ways, one by shifting resources away from high-productivity agriculture, but also more directly by fostering inefficiencies within the manufacturing sector. The 'made to measure' tariff policy encouraged the entry of high-cost, less-productive firms, reducing overall efficiency and preventing the realisation of economies of scale. This in turn perpetuated the cost disadvantage of an industry. In an interesting study of the tyre industry, Stanton concludes that trade protection both encouraged potential entrants and facilitated price collusion.⁴⁴

The timing of the relationship is not perfect because the tariffs do not jump sharply until 1930, whereas the slide in relative manufacturing productivity had been ongoing for some decades. Furthermore, the decline in the relative productivity of the Australian construction industry roughly mirrors that in manufacturing. A significant labour productivity advantage in construction was not sustained and, by 1929, Australia had fallen significantly behind in this sector. Because tariff protection presumably did not affect the non-traded construction sector as it did manufacturing, some factor other than protection – perhaps structural changes induced by World War I or the rise of labour market regulations during this

41 Irwin, *Explaining America's surge*.

42 Broadberry and Irwin, *Lost exceptionalism?*

43 Anderson and Garnaut, *Australian Protectionism*.

44 Stanton, *Protection, Market Structure, and Firm Behaviour*. This effect has been noted in other industries as well: 'in the 1920s hosiery manufacturers were protesting against tariff increases on the grounds that this would allow excessive entry into the industry and render it more uncompetitive with imports by allowing small manufacturing units and excess capacity to be created. Their pleas were ignored, tariffs rose, and so did entry into the industry' (Brown and Hughes, *The market structure of Australian manufacturing*, p. 186).

period – may be responsible for the relative decline in labour productivity in these two sectors.

One factor that may have affected both manufacturing and construction is the prevalence of restrictive business practices. ‘Restrictive business practices have a long history in Australia and have come to be regarded by businessmen and consumers alike as normal business behaviour . . . While just about every restrictive practice known to man is used in Australia (other than those subject to common law restraints), price agreements, both horizontal and vertical, are undoubtedly the most common.’⁴⁵ The lack of effective domestic competition may have been a factor in the failure of Australian industry to match the pace of productivity growth in the UK.⁴⁶ Karmel and Brunt conclude that ‘monopolistic and tightly oligopolistic markets are overwhelmingly more important in Australia than in the USA’, and although the comparison with Britain is not as clear-cut, ‘it seems safe to generalize that monopolistic and tightly oligopolistic markets are significantly, though not overwhelmingly, more important for Australia’.⁴⁷

Thus, various government policies, from collective wage setting to protection against competition and the encouragement of inefficient entry, could have played a role in the evolution of Australia’s manufacturing and construction productivity. Broadberry and Crafts note that the British government’s support for collusion and cartelisation in the 1930s raised the barriers to exit of inefficient firms and encouraged the survival of inefficient plants.⁴⁸ They argue that such policies adversely affected productivity in British industry vis-à-vis the USA during this time. To the extent that such policies were pursued more intensively in Australia, they might have played a similar role in that country.

The role of competition in promoting greater productivity efficiency is fairly well accepted.⁴⁹ However, the suggestion that policies that diminished competition played an important role in Australia’s experience remains just speculation in the absence of further research.

FROM EXCEPTIONALISM TO NORMALCY

Although this paper has focused heavily on the pre-World War I period, with some discussion of the interwar era, the story can be briefly taken up to the present.

45 Karmel and Brunt, *The Structure of Australian Industry*, pp. 94–5.

46 As Brown and Hughes (The market structure of Australian manufacturing, p. 192) note, with respect to Australian industry, ‘workable competition is frequently absent, with consequent technical inefficiency, the lack of progressive outlook and lost growth opportunities. Restrictive business practices thus possibly contribute as much to the inefficiencies and rigidities of the Australian economy, to the downward inflexibility of prices, and towards inflationary tendencies, as monopolies, duopolies, and oligopolies’.

47 Karmel and Brunt, *The Structure of Australian Industry*, p. 87.

48 Broadberry and Crafts, Britain’s productivity gap.

49 For example, Zitzewitz, Competition and long-run productivity, shows that the monopolisation at different times of the American and British tobacco industries had clear negative effects on relative productivity.

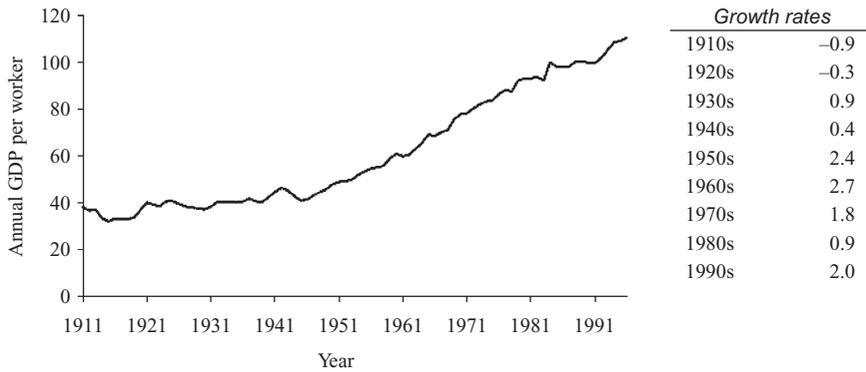


Figure 9. Annual GDP per worker in Australia, 1911–95. Output and employment cover the economy as a whole. The rate of growth (% per year) is estimated by fitting a log-linear trend.

Source: Industry Commission (1997, p. 36).

After World War I, several distinctive aspects of the Australian economy – particularly demographic factors, hours worked, and the mineral resource base – became less distinctive or diminished in importance. By 1920, labour productivity by itself – in industry and services, and to a lesser extent in agriculture – assumed primary importance in determining Australia's relative income position. Australia managed not to fall too far behind the USA in terms of per capita income, but after falling behind the UK in the interwar period, it regained a lead after World War II.

Figure 9 shows overall GDP per worker in Australia from 1911 to the early 1990s. The period up to the mid-1940s was one of very little increase in aggregate productivity. McLean and Pincus distinguish income and living standards, arguing that the latter improved even as the former did not.⁵⁰ Be that as it may, Figure 1 reveals that the UK overtook Australia in per capita income during the 1920s and 1930s.

Since World War II, Australia has experienced a steady growth in labour productivity. Haig examines relative productivity in Australian industry much the way that Broadberry and Irwin did for the earlier period.⁵¹ Madden and Savage examine the sources of this growth in manufacturing for the period 1950–94 and conclude that capital investment, particularly in information technology and telecommunications, has played an important role in that growth (with openness to trade playing a smaller role).⁵² In the 1990s, labour productivity and total factor productivity growth accelerated by about 1 percentage point.⁵³ Yet other coun-

50 McLean and Pincus, *Did Australian living standards*.

51 Haig, *The comparative productivity*; Broadberry and Irwin, *Lost exceptionalism?*

52 Madden and Savage, *Sources of Australian labour productivity*.

53 Parham, *Sources of Australia's productivity*.

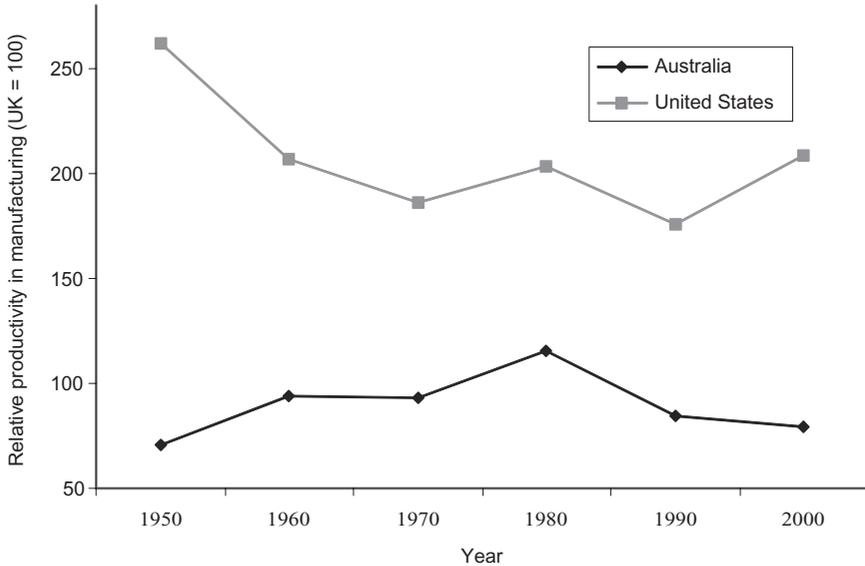


Figure 10. Relative productivity in manufacturing, 1950–2000.

Source: For 1960–2000, Productivity Commission (2003, p. 174). For 1950, Broadberry (1998, table 1) for the USA; Broadberry and Irwin (2007) for Australia.

tries managed similar feats and, as Figure 10 shows, Australia's relative productivity in manufacturing has been stable in comparison to the USA and the UK.

Of course, by this time, the service sector becomes an even more important channel of increasing aggregate productivity, given its increasing weight in economic activity. Hence, focusing on the evolution of productivity in the service sector, which is notoriously difficult to sort out, becomes increasingly critical to understanding modern-day economic performance.⁵⁴

CONCLUSIONS

Australia was unique in enjoying among the highest per capita incomes in the world prior to the depression and drought of the 1890s, although it continued to enjoy a very high income per hours worked until World War I. As a result of the declining size of the mining sector, and the failure of manufacturing and construction to maintain their advantage in relative productivity, Australia fell behind the UK in overall industrial labour productivity and hence per capita GDP. (After World War II, Australia regained a small advantage over the UK in per capita

54 Broadberry, *Market Services and the Productivity*.

income.) Without any distinctiveness in its participation rates or economic structure, Australia – like most other countries – has been forced simply to find ways to improve labour productivity. As Paul Krugman has put it: ‘Productivity isn’t everything, but in the long run it is almost everything. A country’s ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker’.⁵⁵ And that is where Australia stands today.

REFERENCES

- Allen, R. C. (1994) Real incomes in the English-speaking world, 1879–1913. In: G. Grantham, and M. MacKinnon, eds. *Labour Market Evolution: The Economic History of Market Integration, Wage Flexibility and the Employment Relation* (London: Routledge).
- Anderson, K., and Garnaut, R. (1987) *Australian Protectionism: Extent, Causes and Effects* (London: Allen & Unwin).
- Boehm, E. A. (1971) *Prosperity and Depression in Australia, 1887–1897* (Oxford: Clarendon Press).
- Broadberry, S. N. (1997) *The Productivity Race: British Manufacturing in International Perspective* (Cambridge: Cambridge University Press).
- Broadberry, S. N. (2003) Relative per capita income levels in the United Kingdom and the United States since 1870: reconciling time-series projections and direct-benchmark estimates. *Journal of Economic History*, 63, 852–63.
- Broadberry, S. N. (2006) *Market Services and the Productivity Race, 1850–2000: British Performance in International Perspective* (Cambridge: Cambridge University Press).
- Broadberry, S. N., and Crafts, N. F. R. (1992) Britain’s productivity gap in the 1930s: some neglected factors. *Journal of Economic History*, 52, 531–58.
- Broadberry, S. N., and Irwin, D. A. (2006) Labor productivity in the United States and United Kingdom in the nineteenth century. *Explorations in Economic History*, 43, 257–79.
- Broadberry, S. N., and Irwin, D. A. (2007) Lost exceptionalism? Comparative income and productivity in Australia and the United Kingdom, 1861–1948. *Economic Record*, 83, forthcoming.
- Brown, P., and Hughes, H. (1970) The market structure of Australian manufacturing industry, 1914–1962/3. In: C. Forster, ed. *Australian Economic Development in the Twentieth Century* (London: George Allen & Unwin).
- Butlin, N. G. (1962) *Australian Domestic Product, Investment and Foreign Borrowing, 1861–1938/39* (Cambridge: Cambridge University Press).
- Butlin, N. G. (1970) Some perspectives of Australian economic development, 1890–1965. In: C. Forster, ed. *Australian Economic Development in the Twentieth Century* (London: George Allen & Unwin).
- Clark, C. (1951) *The Conditions of Economic Progress*, 2nd edn (London: Macmillan).
- David, P., and Wright, G. (1997) Increasing returns and the genesis of American resource abundance. *Industrial and Corporate Change*, 6, 203–45.
- Haig, B. D. (1986) The comparative productivity of Australian industry. Centre for Economic Policy Research Discussion Paper No. 142, Australian National University, June.
- Haig, B. D. (1989) International comparisons of Australian GDP in the nineteenth century. *Review of Income and Wealth*, 35, 151–62.
- Haig, B. D. (2001) New estimates of Australian GDP: 1861–1948/49. *Australian Economic History Review*, 41, 1–34.
- Hall, A. R. (1963) Some long period effects of kinked age distribution of the population of Australia, 1861–1961. *Economic Record*, 39, 43–52.
- Huberman, M. (2004) Working hours of the world unite? New international evidence of worktime, 1870–1913. *Journal of Economic History*, 64, 964–1001.
- Huberman, M., and Minns, C. (2005) House of work in old and new worlds: the long view, 1870–2000. Institute for International Integration Studies Discussion Paper No. 95, Trinity College, Dublin, October.

55 Krugman, *Age of Diminished Expectations*.

- Industry Commission (1997) *Assessing Australia's Productivity Performance* (Canberra: AGPS). [Cited 27 Aug 2007.] Available from URL: <http://www.pc.gov.au/ic/research/information/aapp/aapp.pdf>
- Irwin, D. A. (2003) Explaining America's surge in manufactured exports, 1880–1913. *Review of Economics and Statistics*, 85, 364–76.
- Jackson, R. V. (1992) Trends in Australian living standards since 1890. *Australian Economic History Review*, 32, 24–45.
- Karmel, P. H., and Brunt, M. (1966) *The Structure of Australian Industry* (Melbourne: F. W. Cheshire).
- Kelley, A. C. (1968) Demographic change and economic growth: Australia, 1861–1911. *Explorations in Entrepreneurial History*, 5, 207–77.
- Krugman, P. (1997) *Age of Diminished Expectations* (Cambridge: MIT Press).
- LaCroix, S. J. (1992) Property rights and institutional change during Australia's gold rush. *Explorations in Economic History*, 29, 204–27.
- McLean, I. W. (2004) Australian economic growth in historical perspective. *Economic Record*, 80, 330–45.
- McLean, I. W. (2006) Recovery from depression: Australia in an argentine mirror, 1895–1913. *Australian Economic History Review*, 46, 215–41.
- McLean, I. W. (2007) Why was Australia so rich? *Explorations in Economic History*, 44, forthcoming.
- McLean, I. W., and Pincus, J. J. (1983) Did Australian living standards stagnate between 1890 and 1940? *Journal of Economic History*, 43, 193–202.
- Madden, G., and Savage, S. J. (1998) Sources of Australian labour productivity change 1950–1994. *Economic Record*, 74, 362–72.
- Maddison, A. (1995) *Monitoring the World Economy, 1820–1992* (Paris: OCED).
- Maddison, A. (2001) *The World Economy: A Millennial Perspective* (Paris: OECD).
- Maddock, R., and McLean, I. (1984) Supply side shocks: the case of Australian gold. *Journal of Economic History*, 44, 1047–67.
- Mulhall, M. (1899) *Dictionary of Statistics*, 4th edn (London: Routledge).
- Parham, D. (2004) Sources of Australia's productivity revival. *Economic Record*, 80, 239–57.
- Prados de la Escosura, L. (2000) International comparisons of real product, 1820–1990: an alternative data set. *Explorations in Economic History*, 37, 1–41.
- Productivity Commission (2003) *Trends in Australian Manufacturing*, Commonwealth Research Paper. [Cited 27 Aug 2007.] Available from URL: <http://www.pc.gov.au/research/crp/tiam/tiam.pdf>
- Rankin, K. (1992) New Zealand's gross national product: 1859–1939. *Review of Income and Wealth*, 32, 49–71.
- Schedvin, C. B. (1979) Midas and the merino: a perspective on Australian economic historiography. *Economic History Review*, 32, 542–56.
- Stanton, J. (1984) Protection, market structure and firm behaviour: inefficiency in the early Australian tyre industry. *Australian Economic History Review*, 24, 91–114.
- Thomas, M. (1988) Manufacturing and economic recovery in Australia, 1932–1937. In: R. G. Gregory, and N. G. Butlin, eds. *Recovery from the Depression: Australia and the World Economy in the 1930s* (Cambridge: Cambridge University Press).
- Thomas, M. (1995) A substantial Australian superiority?: Anglo-Australian comparisons of consumption and income in the late nineteenth century. *Australian Economic History Review*, 35, 10–38.
- Ward, M., and Devereux, J. (2003) Measuring British decline: direct versus long-span income measures. *Journal of Economic History*, 63, 826–51.
- Zitzewitz, E. (2003) Competition and long-run productivity growth in the UK and US tobacco industries, 1879–1939. *Journal of Industrial Economics*, 51, 1–33.