The decline in intercontinental transport costs is cited by Williamson as a significant factor in the integration of peripheral territories into the global economy in the late nineteenth century. Steamships, railroads, and the Suez Canal, he suggests, helped ‘liberate Asia from the tyranny of distance by 1914 (Williamson 2002: 60).’ The phrase, tyranny of distance, was, of course, coined by an Australian economic historian, Geoff Blainey (1966), to describe one of the essential features of Australian history, and it is to the Australian experience that we look in this paper.

I

The work of Williamson and his collaborators is wide ranging. In so far as falling transport costs reduced the economic distance between continents, they served to moderate initial disparities in the relative returns to factors of production (O’Rourke and Williamson 1999). Europe started off with low wages and dear land, while the settler economies began with high wages and cheap (many would say stolen) land. As long-distance transport costs dropped, demand increased for the commodities produced on the land in the settler economies. Land prices and rentals tended to rise

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1 I am particularly grateful to my research assistant, Orawan (Jan) Akkachayanon, for inputing data and producing indices and graphs. Jeff Williamson kindly provided a copy of the unpublished appendices of his joint article with S.I.S. Mohammed. Wendy Adlam, Gavin McLean, Simon Ville helped by responding to specific enquiries about sources or technical terms. The International Documents section of the Parliamentary Library, Wellington, provided assistance with access to official documents. Seminar participants at the Asia Pacific Economic and Business History Conference, Brisbane, in February 2006 provided helpful comments on an earlier version. I take responsibility for any remaining errors.
compared with what might have happened to them in a counterfactual world. Lower transport costs also reduced the natural protection enjoyed by embryonic industries in the settler economies, reducing the premium to labour. More importantly, cheap transport encouraged migration from the old world to the new world, and thus moderated wage pressures in the latter. Equally powerful, but opposite, processes were at work in the economies of Europe. The overall effect, by 1914, had been to raise land prices and rentals relative to wages in many of the peripheral economies, and to raise wages relative to land prices and rentals in Europe. After World War One, the pace of innovation in transport began to slow down (Williamson 2002: 66). Several other factors, including war, economic dislocation, and economic nationalism also started to impede global integration.

Inevitably, the universality and the smoothness of the late nineteenth century convergence in factor price ratios have been questioned, not least by Shanahan and Wilson (2006) in another paper for this session. They show that, between the early 1870s and mid 1880s, wages in the colony of South Australia actually increased relative to rents. It is not uncommon for local particularities to dominate broader trends for shorter or longer periods.

II

Williamson’s analysis of the transport revolution and its effects does not incorporate the experience of Australia. The purpose of the current paper is to contribute to the plugging of this gap. Although a recent article by S.I.S. Mohammed and Jeffrey Williamson (2004) presents nominal and real series of freight rates for various commodities, on a number of long-distance routes served by British tramp shipping, between 1869 and 1950, it does not examine the route between Australia and Britain, evidently because the data are considered to be too sparse.

Nominal and real indices of freight rates for shipments of wheat, greasy wool, and preserved meats from Australia to the UK and Western Europe are presented in this paper, enabling some tentative comparisons to be made with the findings of Mohammed and Williamson. For the wheat trade, which is the main focus of the current exercise, evidence was collected of freight rates on sailing as well as steam-

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2 Relevant data has not been found for New Zealand. Tramp shipping was less important in the export trade of New Zealand. The New Zealand annual yearbooks do not quote freight rates. In a major survey of New Zealand’s trade, Condliffe (1915: 922) estimated that in 1912 freight costs amounted to 7½% of the value of wool exports, 15% of the value of frozen meat exports, and 10% of the value of dairy exports, but his treatment is very sketchy.
powered vessels, and presented in several alternative forms. (Admittedly, there is some truth in the argument that the coverage of the data is less than fully satisfying.)

Tull (1992: 53) also calculated freight rates on the Anglo-Australian run for wheat. He produced a nominal freight series for the years between 1900 and 1969, and a real series for the years between 1913 and 1969. (Tull’s work deals with steamships only.) Mohammed and Williamson obtain their nominal freight rates from the same source – Angier’s shipping reports – as Tull, but appear not to be aware of his article. Given the importance of putting the Australian experience into a comparative perspective, we choose to follow the approach of Mohammed and Williamson as closely as possible.

In so far as shipping costs between Australia and Western Europe were falling, they would have made a contribution to the process of globalization and, other things being equal, to the erosion of initial disparities in relative factor prices. If it could be shown that shipping costs on the Australian route were falling relative to those on other routes, such as the North Atlantic and the Black Sea, then it might also be concluded that the competitiveness of the Australian export industries was rising.

III

As Broeze (1989) shows, the Anglo-Australasian route was one of the last in the world to complete the transformation from sail to steam. The advantage of steam over sail on long distance routes was reduced by the necessity for steamships to carry large quantities of coal (and the need to build coaling stations), which crowded out cargo space. The introduction of more efficient triple expansion engines into the Australasian trade in the 1880s went a long way towards shifting the balance in favour of steam, but the struggle between sail and steam was protracted.

Jackson (1980) describes in some detail the slow process by which the Australian wool clippers were superseded by steamships. By 1904-5, steamships carried 95 per cent of the bales of wool exported from Australia, whereas they had accounted for just 25 per cent of bales exported in 1879-80. On the outbreak of World War One, sailing vessels were still competing successfully with steamships in the transportation of certain bulk commodities, including wheat, from Australia. Many sailing vessels were fully depreciated, and as a result could operate with very low costs.

Setting aside differences in technology (e.g. steam versus sail) shipping may be divided into two broad categories – the tramp trades and the liner trades. Liners ran
(and still run) to regular schedules along specified routes. The liner trades were
dominated by conferences or cartels. Rates were set according to an agreed schedule,
although there was always some cheating. By contrast, tramps picked up cargoes
wherever they could find them, having no predetermined routes. Rates for the carriage
of cargo by tramp were determined on the open market, and this was highly
competitive (Sturmey 1962). Of course, there was some substitutability between
liners and tramps. Where specialist (e.g. refrigerated) vessels were not essential, the
conferences could not afford to let their rates diverge too far from those in the
tramping section, or else they would lose business.

The first conference in the Australasian trade was set up in 1876 under the
auspices of the Associated Australian Owners and Brokers. It was better known as the
‘Davis’ conference, after the name of the owner of the shop above whose premises it
met (Broeze 1989: 13). Conferences were unpopular with many customers and
politicians, on the grounds that they were prone to abuse their market power through
overcharging. As already mentioned, however, their freedom to set prices was
constrained by competition and potential competition from tramp shipping. Moreover,
their immediate customers were not individual farmers, but merchants, rural financing
companies (stock and station agents) and cooperatives.

Wheat was purchased at railway sidings in the producing regions by the agents
of substantial merchant firms (Dunsdorfs 1956: 221-5). If the squeeze was to be put
on the growers, it was the merchants who applied it. In principle, merchants were in a
better position than individual growers would have been to secure reasonable freight
rates from shipping companies. The stock and station agents arranged for the
consignment of commodities such as wool to the UK, and had the ability to strike
hard bargains with the liner companies (Ville 2000: 120-5; Ville 2005). In Otago (a
province of New Zealand), relations between one stock and station agency, the
National Mortgage Association, and the Union Steamship Company, were particularly
close. They had interlocking directorates and adjacent offices (Ville and Fleming

The liner industry was part of a wider Anglo-Australasian commercial and
financial complex. Enumerating the overall costs and benefits of this complex to
Australia and New Zealand is beyond the scope of the present exercise. Commodity

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Sturmey provides a valuable overview of British shipping, covering the tramp and liner sections.
prices were determined in the international market place (i.e. London), and collusion between shipping companies, and/or between shipping companies and stock and station agents must have reduced the return to producers. But not all of the profits of the shipping companies and stock and station agents were lost to the Australian and New Zealand economies. Some profits were reinvested locally, and some were paid out as dividends to Australasian shareholders.

Tramp shipping was rather different. Tramps were multi-purpose vessels, often spending a number of years away from their ‘home’ ports. The activities of a typical tramp, the *Strathlorne*, which was in the fleet of Burrell & Son of Glasgow, in the period between December 1925 and March 1928, are described by Cage (1997: 34-5). This vessel sailed from Rotterdam to Portland, Oregon in ballast. At Portland she obtained a cargo of timber for Sydney. She then spent time working in the phosphate trade between Nauru, Australia and New Zealand, and in the regional trades between Tahiti, Indonesia, Singapore, Hong Kong, Taiwan, Philippines, and Japan. Eventually, the *Strathlorne* sailed from Calcutta to South Africa, from where she proceeded to Texas. After carrying a consignment of petrol from Texas to Argentina, she picked up a cargo of grain for Sweden.

Liners predominated in trades that required expensive specialised vessels (e.g. for the carriage of refrigerated meat and dairy products or passengers) or where customers valued regular and reliable services (e.g. the Australasian wool trade). Tramps were relatively more popular in the less sophisticated bulk trades (e.g. wheat, timber, and minerals). On the eve of World War One, tramps were responsible for about 40 per cent of Australia’s wheat exports. Liners sometimes carried wheat, not least when they had failed to pick up other business. On such occasions, they were prepared to accept consignments of grain at rates that were fully competitive with those demanded by tramps. This competition became even more intense in the interwar period (Burley 1968: 108, 166-7; Tull 1992: 42).

While this paper concentrates on freight rates, it is worth pointing out that the efficiency of international transport also depended on the charges levied by ports. According to Tull (1992: 49-52), many Australian ports were quite inefficient. Until the interwar period, and in some cases the 1950s, these ports were ill prepared to handle bulk cargoes. It was only in 1920-21 that bulk handling of wheat commenced in Australia. Investment by public authorities and cooperatives played an important role in the transformation of this aspect of Australia’s export infrastructure.
As late as the mid-1930s, about 30 per cent of Australian wheat exports were bagged. The freight rate from Sydney to the UK was about 10% less for bulk-loaded wheat than for bagged wheat (Burley 1968: 202).

Mohammed and Williamson’s main source for nominal freight rates for tramp shipping was Angier’s Steam Shipping Report, which was published in the January issue of the shipping trade journal, Fairplay. This source includes maximum and minimum freight rates for the carriage of wheat from Australia to the UK, but not for the entire period between 1870 and 1939. As already mentioned, Mohammed and Williamson omitted the Australian trade, no doubt for this reason.

We assume that Mohammed and Williamson’s data are for steamships. Given that competition between sail and steam on the Australian route continued until World War One, it is necessary to decide whether or not to take the rates charged by ‘sailers’ (to use Angier’s term) into account, and, if so, how to take them into account. We choose to look at steam and sail rates separately, and then to combine them in two alternative ways.

Freight rates for the conveyance of wheat by sailing ship from Australia and the UK are quoted in Angier’s report for the isolated year of 1873, but there are no further data until 1889. Then there are annual entries for ‘sailers’ between 1889 and 1895, and between 1900 and 1916. Rates are available for steamships between 1899 and 1939, omitting 1902 and 1917. The midpoint between the maximum and minimum rates (taking steam and sailing ships separately) has been calculated for each year.

Mohammed and Williamson set 1884 as their base year. This was awkward, in view of the more limited chronological coverage of the Australian data, and all series have been reset with a base year of 1900.

Four nominal freight indices for the Australian wheat trade have been calculated and graphed:

a) JS1 (sailing ships only): 1873, 1889-1895 and 1900-1916 (Figure 1)

b) JS2 (steamships only): 1899-1939, omitting 1902 and 1917 (Figure 2)

Angier also has some quotes for other traffic including ‘wool’, ‘general’ business, and the Newcastle (NSW) to Asia coal trade, but not regularly. These data have been discarded.
c) JS3: sailing ships to 1898; steamships from 1899 onwards (omitting 1902 and 1917)

d) JS4: sailing ships to 1898; the midpoint of sail and steam 1900-1916 (omitting 1902); steamships 1918-1939 (Figure 3)

Freight rates on sailing vessels were somewhat lower than rates on steam tramps. In 1901, for example, the freight rate per ton of wheat from Australia to the UK or ‘Continent’ was in the range of 26s 3d to 38s 9d for steam, compared with a range of 22s 6d to 33s 9d for sail. Such a disparity may reflect the longer journey time by sail, the low fixed costs of many sailing vessels, and the fact that sailing ships displaced from other routes were attracted into the Australian run.

Mohammed and Williamson deflated their nominal freight indices in two alternative ways: (i) using the Sauerbeck index, and (ii) using the price of the commodity (or commodities) carried, in this case wheat. Their approach has been replicated. Thus, two alternative real freight indices have been calculated for each of JS1 to JS4. (See Figures 4, 5, 6)

Interpretation of these results is tricky. Figure 5 suggests that real freight rates for steamships were lower in the 1900s than they were in the late 1890s, but that rates picked up again after 1910. Combining steam with sail does not make an appreciable difference. The big fall in real freight rates on sailing vessels between 1873 and the 1890s and 1900s suggests that the transformation of the Australian trade occurred during the period before freight rates were collected systematically. Although the transport revolution came late to the Australian route, its impact on shipping costs appears to have been speedy.

After 1900, there was relative stability in real freight rates until the 1930s, excepting periods of war. But this ‘stability’ masked some very significant changes in the environment. Indeed, market conditions were quite different after World War One. The 1920s was an era of depressed primary commodity prices. It was also one of excess supply in the shipping industry. High wartime shipbuilding output, and low post-war demand for shipping services, pushed freight rates below what they might otherwise have been. Several other factors were brought into play, including the increased use of protective shipping subsidies by governments.
Real JS2 and real JS4 were selected as the most promising bases for making comparisons with the real freight indices for grain shipments that are developed in the article and appendices by Mohammed and Williamson. Using the Sauerbeck versions of the relevant series, the following graphs were generated:\(^5\)

**Figure 7** (real JS2, M&W’s Eastern North America grain) indicates that real freight rates on the North Atlantic route fell relative to those on the Australian route after 1900, and that this gap widened somewhat in the interwar period.

**Figure 8** (real JS2, M&W’s Eastern North America, Black Sea and Western North America grain) presents a more or less similar story.

**Figure 9** (real JS4, M&W’s Eastern North America grain).

**Figure 10** (real JS4, M&W’s Eastern North America, Black Sea and W. North America grain).

The patterns depicted in these graphs provide some grounds for thinking that, at least during the first one-third of the twentieth century, the cost of shipping wheat from Australia may have increased relative to the cost of shipping wheat from some of its competitors.

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\(^5\) Use of the ‘commodity price’ variants would make little difference to the broad trends
Additional data on shipping costs between Australia (Sydney) and Western Europe, from 1889 onwards, are to be found in the *New South Wales Statistical Register*.\(^6\) It is unclear whether the rates quoted in the *Register* are for tramps, liners, or both types of vessel. The *New South Wales Statistical Register* provides data on a wider range of commodities than is recorded in Angier.\(^7\)

Freight rates for wheat are not published in the *Register* until 1905, and even then are not directly comparable with those in Angier. The rates in Angier are evidently for the calendar year, while those in the *Register* are for the year to June.

However, freight rate series going back to 1889 have been calculated for shipments of greasy wool and preserved meat by steam to London. As usual, the midpoint between the highest and lowest rates each year has been calculated, and the base year set at 1900. The Sauerbeck index was used to deflate the nominal freight indices.

Figure 11 depicts a real freight index for greasy wool shipments. Rates for wool seem to have been somewhat more buoyant than those for wheat in the 1920s and early 1930s, but fell off somewhat in the late 1930s (when rates for wheat rose).

Figure 12 (preserved meats) tells a very similar story.

There is no basis for comparison between these two series and those in the article by Mohammed and Williamson. Taken on their own terms, however, the greasy wool and preserved meats series suggest that matters were not getting any easier for Australian exporters.

As one might expect, the cost of shipping wheat to Britain from different points of the globe followed similar paths at the broadest level. Real freight rates tended to fall in the late nineteenth century, but there was some levelling off in the early decades of the twentieth century (Lundgren 1996: 5-6), partly in connection with the political and economic disruptions of the war and interwar periods. The overall pattern of developments on the Australian trade is consistent with world trends, including the

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\(^6\) This source might not have been used before for this kind of exercise. But perhaps readers know better, or have reason to believe that the *Register* is unreliable.

\(^7\) For example, freights for wool, frozen meat, tallow, copra, leather, hides, wheat, preserved meat, rabbits, measurement goods, timber, and butter in the 1914-15 edition.
progress of globalization in the late nineteenth century, and its stalling or reversal after 1914.

However, there is also some evidence to suggest that Australia’s relative position with respect to shipping costs, at least for wheat, was deteriorating in the early twentieth century, including most of the interwar period. The war period saw the introduction of larger and more efficient vessels. One possibility is that, after the war, new ships were at first employed disproportionately on the North Atlantic and other routes close to Europe, leaving the Australian route to older and less efficient ships. But this is a moot point. Burley (1968: 267-8) shows that, in 1923-4, British tonnage in the Australian conference contained a smaller proportion of vessels under five years of age than did the British fleet as a whole. On the other hand, he suggests that tramps calling at Australia were newer on average than vessels operated by conference lines between the UK and Australia.
Bibliography


*Fairplay*


*New South Wales Statistical Register*

Fig 1: Index of nominal tramp freight rates for the carriage of Australian wheat to London (sail JS1)
Fig 2: Index of nominal tramp rates for the carriage of Australian wheat to London (steam JS2)
Fig 3: Index of nominal tramp freight rates for the carriage of Australian wheat to London (JS4)
Fig 4: Index of real tramp freight rates for the carriage of Australian wheat to London deflated by Sauerbeck and commodity prices (sail JS1)
Fig 5: Index of real tramp freight rates for the carriage of Australian wheat to London (deflated by Sauerbeck and commodity prices) (steam JS2)
Fig 6: Index of real tramp freight rates for the carriage of Australian wheat to London (deflated by Sauerbeck and commodity prices) (JS4)
Fig 7: Index of real tramp freight rates of JS2 and E. North America-Grains (deflated by Sauerbeck)
Fig 8: Index of real tramp freight rates of JS2, E. North America, Black Sea and W. North America (deflated by Sauerbeck)
Fig 9: Index of real tramp freight rates of JS4 and E. North America-Grains (deflated by Sauerbeck)

M&W: real freight rates for E. North America-Grain deflated by Sauerbeck: 1900 as a base year
JS4-real freight rate indices deflated by M&W Sauerbeck
Fig 10: Index of real tramp freight rates of JS4, E. North America, Black sea and W. North America (deflated by Sauerbeck)
Figure 11: Index of real freight rates for the carriage of wool (greasy) from Sydney to London (Steamships)
Figure 12: Index of real freight rates for the carriage of preserved meat from Sydney to London (Steamships)