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*ECONOMIC EFFECTS OF RAILWAY
CONSTRUCTION IN AUSTRALIA, 1861-1914*

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*DR. A.L. LOUGHEED**

*Department of Economics
University of Queensland*

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*Department of Economics
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Dr. A.L. Lougheed

Given the rapidity with which the railways spread across eastern Australia between 1861 and 1890, the amount of investment expenditure undertaken, and the benefits accruing to other industries, it could be claimed that railway construction played an important role in the development of Australia at the time. N.G. Butlin, however, has disputed this claim with such arguments as the following. The external economies normally expected to accrue to other industries from the construction of railways were limited in Australia during this period, not so much as a result of profit or freight rate policies pursued by the colonial governments but because of the manner in which investment planning was undertaken. Such planning led to the destruction of a thriving river trade; was activated largely by intercolonial rivalry to the extent that several lines were laid to capture markets in neighbouring colonies and the produce of such districts; was typified by a lack of developmental building; concentrated on moving traffic to the capital ports; adversely affected domestic wage and interest rates; and thus provided a lack of incentive to diversify industries, notably in the export and import-competing sectors. In addition, the railways became unprofitable because of the haphazard nature of construction, especially into declining areas. Finally, railway construction and its financing adversely affected the balance of payments as the result of the lack of incentive to diversify the industrial structure, a rising foreign interest bill, and increasing imports of railway materials.¹ Each of these points will be considered in some detail.

1. N.G. Butlin, *Investment in Australian Economic Development 1861-1900*, Cambridge, Cambridge University Press, 1964 (henceforth *Investment*), Ch.V. Butlin restricted his analysis to the period 1861-1900. For reasons noted below, the analysis is extended to 1914. See also E.O.G. Shann, *An Economic History of Australia*, Cambridge University Press, 1930, pp.295-7 & 304-7.

THE EXTERNAL ECONOMY EFFECTS OF RAILWAY CONSTRUCTION

Destruction of the River Trade

It is claimed that intercolonial rivalry in railway planning was manifested primarily in the destruction of a thriving river transport system because produce was diverted away from the rivers towards the capital cities of eastern Australia. By the 1880s, "the value of the rivers as freight carriers was being rapidly destroyed by railways in N.S.W. and Victoria."²

Considering Butlin's own figures,³ however, the decline in river traffic at Murray River ports other than Echuca was almost imperceptible until the 1890s. If the higher than normal annual tonnages handled at Echuca from 1878 to 1881 are ignored, there was no dramatic fall in the total tonnage passing through that port until the 1890s. If they are not ignored, Echuca's traffic declined from 1881 to 1884, after which year it rose until 1891. The figures for Swan Hill and Cowana (Mildura) also do not decline until the depressed years of the nineties (the railway did not reach Mildura until 1903). Indeed, it is not apparent that factors other than droughts and the depressed economic climate were at work during the 1890s adversely affecting both the navigability of the rivers and the volume of rural production.

Victorian railways constructed to the Murray by the early 1900s were laid to Echuca (completed in 1864), Wodonga (1873), Wahgunyah (1879), Yarrawonga (1886), Cobram (1888), Koondrook and Swan Hill (1890), and Mildura (1903). The Echuca line appears to have enhanced the importance of that port for several decades as goods to and from properties in nearby areas were transhipped from railway to river craft and vice versa. Of the other railways noted, only the Wahgunyah line could have affected Echuca's traffic in the early 1880s and, because of its relative unimportance in the river trade, it is doubtful if this line

2. Investment, p. 313.

3. Ibid., p. 312.

appreciably reduced the status of Echuca.

It therefore seems that the most one can claim is that the railways altered the direction and curtailed the growth of the river trade in the 1870s and 1880s and that only later (possibly after 1900) did the volume of river traffic decline rapidly as a result of the competition from the alternative mode of transport.

In New South Wales, only two railways were constructed to the Murray, namely, to Albury (completed in 1881) and from Deniliquin to Moama (in the mid-1870s). The construction of the latter line had little effect on the river trade although it benefited the population of the Deniliquin district by substantially diminishing land transport costs.⁴ The railways to Narrandera and Hay undoubtedly affected the river trade adversely but on the grounds of distance from the coast and the time required to carry wool to the ports, the pastoralists in the surrounding districts no doubt appreciated the arrival of the railways.⁵

4. It was reported at the time that "The cost of carriage ... (in 1873) ... between Moama and Deniliquin is about 60 or 65sh. per ton by horse teams, a charge about six times as high as on some of the railways leading to Sydney from the inland districts." (Report of the select committee investigating the proposed Deniliquin-Moama railway, N.S.W. Votes and Proceedings 1872-73, Vol. 2, p.430). O.B. Williams ("The Riverina and its Pastoral Industry 1860-1869", in Alan Barnard, *The Simple Fleece*, Melbourne, Melbourne University Press, 1962, p. 420) notes another attribute of this railway and the Echuca-Melbourne line, for which the alternative mode of delivering sheep for sale in Melbourne was droving. Although the railway was more expensive per sheep than droving, it was preferred because of its speed and the higher losses associated with droving.
5. If Butlin's contention that the lines to Hay and Bourke in N.S.W., and to Cunnamulla in Queensland were laid to transfer traffic from the Darling (Investment, p. 367) was true, it should also be noted that such ventures improved the efficiency of the transport system in these regions irrespective of any self-interested motives of the governments. The Darling was the most unsatisfactory river in the system for continuity of navigability and often boats disappeared from it for over a year (see Williams, *loc. cit.*, p. 432).

Butlin also noted that the Victorian railways had certain advantages over river traffic in the attraction of Melbourne which offered "better facilities for banking and trade, better prices and quicker sales for wool, (and) availability of shipping space,"⁶ and that the railways were more reliable, safer and faster. But he surprisingly concluded that these advantages were not important considerations despite other disadvantages of river trade:

"Neither road nor river could be relied upon. The river services were risky at all times and for some routes un-insurable; they were intermittent at best and sometimes unavailable for long periods. The risk of losses through shipwreck and the costs of prolonged storage when rivers ran dry gave the railways advantages to offset the relatively high railway freights."⁷

Indeed, it would have been unusual if wool-growers, who would have been aware of the advantages of obtaining their annual wool receipts quickly⁸ and who would have wished to pay the lowest prices for their supplies (and receive them sooner), had not chosen to deal through Melbourne.⁹ To demonstrate the superiority of the river route through Victor Harbour over the Echuca-Melbourne route, Butlin argued that the latter was the more costly alternative. He compared the cost per ton of shipping wool from Wentworth (at the junction of the Murray and Darling rivers) by the two routes and found the former to be appreciably cheaper.¹⁰

For several reasons this argument appears unacceptable. Both routes included river transport, the cost of which from Wentworth up the Murray to Echuca was a major contributing factor to the higher cost of that route. What is more important, however, is the fact that Wentworth, on the outer fringe of the Riverina, could not be classed as a representative centre of the

6. Op. cit., pp. 402-3.

7. Ibid., p.403.

8. Interest on short-term loans to pastoralists until their wool was sold and interest foregone on deposits when the wool was either in transit by river or road or stored on farm for months awaiting the arrival of river boats would both have partly determined the most attractive type of transport.

9. Melbourne also offered what Victor Harbour (say) did not - a diversified market for all kinds of commodities, including sheep and cattle for meat.

10. Ibid., p. 402.

region's wool industry and, for this reason, the conclusion that "it is a significant commentary on the role of the railways that the greater part of Southern N.S.W. wool was shipped on the more costly route via Echuca"¹¹ cannot be sustained. Had Deniliquin or another district near the centre of the region been chosen the results may have been quite different.¹² In addition, the Riverina pastoralists undoubtedly took into account the other monetary and non-monetary advantages of dealing through Melbourne.¹³ It is thus by no means clear that railway transport was more costly than river transport for a majority of wool producers. If the railway route proved to be cheaper for a high proportion of the goods carried, this argument that higher railway costs offset all the advantages offered by Melbourne disappears.

Butlin also overlooked the fact that, while the districts bordering the rivers may have been serviced cheaply by river transport, road transport was relatively expensive even for comparatively short distances¹⁴ and, whereas the rivers were immovable, railways could be constructed in such a way as to reduce land transport costs considerably for many rural producers, as demonstrated by the Albury, Narrandera, Jerilderie and the Deniliquin-Moama lines. In Victoria, too, the extensive railway network connecting the Murray to Melbourne contributed substantially to the economic development of the Gunbower, Rodney, Moira, and Bogong counties by offering

11. *Idem.* (my italics).

12. In 1875, for example, only three ports down-river from Echuca were regarded as export points for N.S.W. wool: Swan Hill (closer to Echuca than to Wentworth), Euston, and Wentworth. If Butlin's method of determining relative costs of the two routes had been applied to Swan Hill, the results could have favoured the Echuca route even if river transport were included in both routes. In 1875, Euston and Wentworth accounted for only a quarter of the N.S.W. wool exported overland, Swan Hill for about one-third, and Echuca and ports farther upstream for 41 per cent.

13. The Hay line in N.S.W. (completed in 1882) progressively made inroads into the Murrumbidgee-Murray river traffic for reasons similar to those applying to the lines to the Darling. The Murrumbidgee was also difficult to navigate and closed to traffic more often than the Murray.

14. See Footnote 4 above.

properties some distance from a navigable river an alternative, more efficient form of land transport to the waggon, especially for goods specifically produced for sale in Melbourne.

Two other points should be noted. First, if railways had not eventually replaced the river traffic, large and increasing annual expenditures would have been required to preserve the navigability of the rivers. It was an example of the new technology partly eliminating the previously and comparatively inefficient modes of transport. Second, whereas concentration on river transport inevitably tied rural production to certain areas of the colonies, the provision of railways was more flexible and lines could be built into regions which appeared most appropriate for farming.

It is thus by no means clear that the eventual replacement of the river traffic by the railways should have been regretted. It may have represented no more than economic progress just as the replacement of many railways after World War II by road transport represented the introduction of further advances in land transport technology.¹⁵

Intercolonial Rivalry

The competition between the railways and river transport was a special feature of Butlin's intercolonial rivalry argument:

"Confined to action within their own borders, each ... (colonial government) ... attempted to set in motion contrary commodity and passenger flows and a highly inefficient transport system was imposed on the area." (N.S.W., Victoria, South Australia and Queensland).¹⁶

There is an element of truth in this argument but there are several other factors

15. No Fogel-type analysis of the Australian railways has yet been attempted (see R.W. Fogel, *Railroads and American Economic Growth*, Baltimore, John Hopkins Press, 1964). In comparison with the central United States, however, the inland waterways of Australia could not be considered seriously as major transport routes. The high cost of road transport and the primitive state of road transport technology prevented other forms of land transport from becoming economic alternatives over long distances. Nevertheless, in a cost-benefit analysis of railway investment, the decline of water transport must be set off as a cost against the benefits accruing to the economy from the acquisition of the railway networks. But, as noted above, river traffic did not disappear suddenly or completely in the short-run. It remained almost stationary until the 1890s and 1900s.
16. *Investment*, p. 293.

to be taken into account. Although contrary commodity and passenger flows may have resulted from the railway investment undertaken, from the viewpoint of the whole of eastern Australia, it cannot be forgotten that the colonies were virtually four separate countries at the time and each colonial government acted in accordance with the welfare of its own people. As there was no "national" co-ordination at the time, it was inevitable that some duplication occurred near common borders. But, as noted above, even in those cases in which intercolonial rivalry predominantly manifested itself, the railways serviced many districts (between the rivers and the coastal ports) with a transport system more efficient than that previously available.

The main "intercolonial rivalry" railways constructed before 1890 were the Echuca and Wodonga lines and their branches in Victoria, the Albury and the Narrandera-Jerilderie-Hay lines in N.S.W. on the Victorian side and the Bourke and Wallangarra lines on the Queensland side, and in Queensland the line to Warwick and its extension to Cunnamulla. But these lines also aided the development of the districts they traversed. The Echuca and Wodonga lines, for example, substantially improved the attractiveness of the northern Victorian counties for wheat-growers and, by 1876, the share of this region of the total Victorian acreage under wheat had risen to 50 per cent from 22 per cent in 1871, during a period of rapid expansion of wheat-growing in the colony. It was precisely in those counties serviced by these railways constructed to the Murray (Moirra, Bendigo, and Rodney) that the major increases occurred.

Perhaps this counter-argument also applies to New South Wales, even if to a lesser extent. Besides the benefits of lower transport costs and improved communications offered by railway penetration of the Riverina

the lines laid towards the Murray allowed a subsequent expansion of wheat-growing in the South-Central Division and, at the same time, the Albury line provided Sydney with access to the northern Victorian wheat districts in those decades in which N.S.W. was not self-sufficient in the product.

The railway extensions westward on both sides of the N.S.W.-Queensland border were at least 100 miles from the common border. The Toowoomba-Warwick line was constructed to increase the self-sufficiency of the colony in wheat and dairy products and to allow, eventually, access to the tin mined at Stanthorpe. The markets for the produce of the rich Darling Downs lay mainly in Brisbane, Ipswich and Toowoomba and only to a minor extent was inter-colonial rivalry an issue in Queensland's railway investment programmes.¹⁷ In N.S.W., the Wallangarra line may have reduced the quantities of tin exported from the northern districts of N.S.W. through Brisbane, but it is almost certain that the road-railway-ship route through Queensland was more costly than rail transport direct to Sydney. In addition, this line did not appreciably affect the direction of commodity flows to and from the Darling Downs.

In the 1860s, South Australia favoured the growth of the river trade because of the benefits it could bestow on Adelaide but, even when its hopes failed to materialise, it is doubtful if its railway construction led to major reversals of commodity flows from western Victoria and N.S.W. In the 1880s railways were constructed into the south-east corner of the colony and

17. The Queensland Government's attitude towards this aspect of railway building can be illustrated briefly. When a petition signed by residents of Tenterfield, Stanthorpe, Jimbour and Eton Vale in 1881 requested a lower railway tariff to encourage the continued use of Brisbane's trading facilities, the Minister for Railways opposed all arguments and stated that he did not wish to begin a war of tariffs with N.S.W.

connection with the Victorian system effected. Perhaps the major outcome of this connection was the linking of the two capital cities and the acceleration of trade and commercial relations between them. The Mt Gambier line, the branch line from Murray Bridge eastward into the Mallee and the line on Eyre's Peninsula were all essential for the opening-up of rich wheat and dairying districts in later decades.

While there is an element of truth in the claim that railway construction up to 1890 based on intercolonial rivalry led to inefficiencies being introduced into the transport system of eastern Australia, the argument loses much of its force when other factors are considered. Many lines were constructed into areas of each colony well removed from common borders and those lines constructed towards common borders accelerated the expansion of agriculture in several districts.

Lack of "Developmental" Construction

One of Butlin's arguments was that "Only in Queensland and in the later phases of South Australian building did 'developmental' lines - construction into areas of underdeveloped resources - play a prominent part"¹⁸ and "... except for early Victorian building and the smaller developmental efforts of South Australia and Queensland, railway building followed and did not precede settlement."¹⁹

From the latter it appears that "developmental" construction involves the penetration of areas entirely uninhabited. The normally accepted definition of the term includes the railway constructed into a district in which some settlement had previously occurred but in which the lack of

18. Op.cit., p. 296 (my italics).

1 Ibid., p. 401 (my italics). It is apparent from these quotes that the major criticisms are aimed specifically at "later" Victorian and N.S.W. construction. It was also contended that much investment occurred in constructing lines to "moribund gold towns" (pp. 296 and 368). In some important instances such as Bendigo and Ballarat, however, such construction accelerated the transition of the districts served from mining to agriculture. Moreover, some lines passed through such towns to open up agricultural land farther inland.

adequate transport had placed so heavy a constraint on the growth of industries in the area that further settlement was impeded until the railway arrived. Under this definition it could be argued that a high proportion of the railways constructed in Australia between 1860 and 1900 (and after 1900) were developmental in nature. Elsewhere, the importance of railway construction has been demonstrated for the growth of the wheat industry (especially in Victoria between 1860 and 1914), the spread of dairying, the mining industry and, perhaps to a lesser extent, the pastoral industry.²⁰ In most areas examined, the penetration of a railway released the brakes on the development of rural industry and production rose at much higher rates than the colonial average growth rate.

Taking into account the number of districts which were opened up for settlement and for rural industries it is obvious that the developmental nature of railway construction had a far greater impact on colonial development than did the intercolonial rivalry aspect of railway investment.²¹

Concentration of Traffic on the Capital Ports

There is no doubt that, in Victoria, New South Wales, and South Australia, there was a concentration of railway traffic on the capital ports. In Queensland, on the other hand, three major systems existed by 1914 and the process of connecting them had not been completed.

20. See my *International Trade and Economic Growth in Australia, 1850-1914* (Unpubl. Ph.D. Dissertation, University of Queensland, 1974) Ch.8, for a detailed analysis of this topic. See also J.P. Fogarty, "The Staple Approach and the Role of Government in Australian Economic Development", *Business Archives and History*, Vol. VI, 1966, esp. pp. 45-50, and Geoffrey Blainey, *The Tyranny of Distance*, Melbourne, Sun Books, 1966.
21. Geoffrey Serle (*The Rush to be Rich*, Melbourne, Melbourne University Press, 1971, p. 80n.) noted that "in the eighties barely 10 per cent of Victorian railway building was relevant to the Riverina question." From 1881 to 1891, 55 per cent of the total mileage in use in Victoria was constructed.

Perhaps this characteristic of railway planning resulted partly from the desire of the cities to dominate their hinterlands and to handle the growing intercolonial trade.²² To a large extent, however the central position of Melbourne and Sydney on the coast and their suitability as ports played important parts in determining their predominance over all other potential port locations. It is also true that railway construction contributed to the intensification of the urbanisation process during the 1870s and 1880s and to the building booms in the major capital cities in the 1880s. Nevertheless, it is difficult to accept the general conclusion that:

"the end result of concentrating the expanding freight traffic in Melbourne was perhaps the greatest diseconomy of all - growing congestion, population explosion and building boom in the eighties, a boom in which the railway development was a key factor."²³

By 1886, there were other ports in Victoria connected with vast hinterlands, such as Geelong, which was provided in the 1870s with direct rail access to the Wimmera and the Western Division. Portland, Warrnambool, and Port Fairy were all connected with the Wimmera and the western countries and, by 1890, Bairnsdale was accessible by rail from most parts of Gippsland. The most interesting question, therefore, is why Melbourne grew so rapidly relative to these other ports, despite the attractions offered to these other ports by the railways constructed to them from the interior. An associated question relates to the reasons for the shift of primary manufacturing industries mainly into Melbourne rather than towards these other ports. The answers to these questions, perhaps, would also explain the continued concentration of secondary and tertiary industries in the

22. N.G. Butlin, *Investment*, p. 297.

23. *Ibid.*, p. 297. It is difficult to accept that congestion was a major external diseconomy emanating from the railways in the 1880s, except, perhaps for short periods of time, for example, following the harvesting season.

major capital cities in recent decades as in the 1880s, despite the declining relative importance of the railway networks and efforts of governments to decentralise production.

One important reason for the concentration of traffic on capital cities lies in the fact that for many rural exporting industries a large proportion of output was absorbed in the domestic market, for example, grains, flour, milk, butter, cheese, meats, and vegetables, and the capital city predominated in the domestic market. It was thus normal practice for producers to consign such produce to agents in the metropolis where the decisions were made on the quantities to be exported and to be retained for domestic consumption. Consigning agricultural produce direct to the capital city by rail avoided the need for transshipping at other ports the large quantities of produce required for consumption in the metropolis,²⁴ even if there were some advantages in transporting the exportable surplus to the port nearest the farm. While most wool produced was exported, the growing importance of wool sales in the capital cities provided the stimulus for the movement of this commodity towards the metropolis in each colony.²⁵ In manufacturing, there were locational advantages connected with production in large cities, such as nearness to the largest domestic markets and sources of labour, capital, and such raw materials obtained from other local manufacturing industries or from abroad. Tertiary production tended also to become concentrated in the cities for similar reasons. These and other factors tend to produce a cumulative process which becomes a crucial aspect of the urbanisation process.

24. Transshipping would add to the transportation costs, a factor which would seriously affect the expansion of wheat production, for example. In addition, the direct route was generally the fastest, an important factor in transporting perishables.

25. Overseas shipping companies undoubtedly preferred to have only one port of call in each colony. Having to maintain agencies in a number of ports would have been much more costly and freight rates on the overseas run would have been higher. In addition, the capital port may have been located at a point on the coast giving safe and adequate anchorage.

The concentration of population in a few cities during the 1870s and eighties certainly occurred as railway construction gathered pace, but the trend was also a prelude to greater concentration in such cities in later decades and was only partly due to the fan-like railway networks. Other influences such as those referred to above, not restricted to these two decades alone, undoubtedly accounted substantially for the growth of capital cities in Australia. In addition, it is by no means clear that the disadvantages of concentration, such as congestion, population growth, and relatively short-lived building booms, were not greatly outweighed by these other advantages. Finally, if other ports had developed and had attracted population at the same rate as the metropolis, a considerable amount of expenditure would have been required to produce large-scale port improvements to accommodate many more ocean-going ships for a relatively brief period of each year. On balance there may have been large diseconomies for the colony as a whole in providing for a number of relatively large ports at the time along a coastline which, in comparison with that of Queensland, for example, was relatively short.

To summarise the four arguments so far considered, it is the opinion of the writer that the intercolonial rivalry argument has been substantially over-emphasised, that the decline in the river trade may not have been as regrettable as has been argued (the lower cost aspect of this argument has yet to be substantiated), that the developmental nature of much of the railway construction has been under-rated, and that railway planning only partly explains the concentration of railway traffic on the capital ports. While each of the four arguments above have some influence, it appears that this influence on the accrual of external economies to other industries may not have been as serious as first argued.

The Influence of Public Investment on Factor Prices

According to this argument, government investment undertakings placed such severe strains on the labour and capital markets that private businessmen were compelled to pay higher wages and interest rates than they would have done in other circumstances. As a result, the incentive to invest in the private sector was substantially curtailed, thus reducing the external economy effects of public investment expenditure. Let us consider each type of factor payment.

(a) Wage Rates

The adverse effects of public capital formation on private investment in the 1870s and 1880s through its influence on domestic wage rates occurred as a result of the presumed poaching of labour from private ventures and the failure of the colonial governments (except in Queensland) to undertake assisted immigration programmes in order to obtain foreign labour for their construction programmes.²⁶ It is argued that:

"Throughout the period of expansion to 1889 we are dealing with an economy in the process of rapid growth in many fields of activity, moving from the beginning fairly quickly to a position approximating full employment ...²⁷

"By bidding labour away from private activity, rising government investment in communications was an important factor encouraging a steady rise in money and real wage rates; the consequential rise in local costs exposed the domestic economy increasingly to the competition of world prices which were tending to fall throughout a large part of this expansionary period ..."²⁸

In this way it is contended that railway investment retarded investment in other industries by limiting the availability of labour and thus by raising its costs.

26. Op. cit., pp. 273 and 297.

27. Ibid., p. 373.

28. Ibid., pp. 297-8.

It hardly needs to be noted that any investment programme will affect the availability of labour and thus will also affect wage rates. What is to be debated here is the extent to which wage rates were raised as the public investment programmes were being implemented. We concentrate mainly on the two major colonies, New South Wales and Victoria.

For Australia as a whole, Butlin's own estimates of money wage rates²⁹ show large increases in 1872-74. By 1876 this upward movement in wages was completed and little variation occurred until the 1890s. The N.S.W. data tend to reflect the Australian trends while, in Victoria, the upward pressures had disappeared by 1874 and, from that year until the late 1880s, wages in that colony were remarkably stable. Real wages appear to have risen steadily throughout the period, predominantly because of the general downward drift in commodity prices, especially in the 1880s. Thus the most one could claim with respect to the effects of railway construction on wage rates is that, with the exception of the first half of the 1870s, government investment prevented money wage rates in the private sector from falling.

As for employment, a detailed study of Coghlan's account of this period, referred to by Butlin, reveals that, from the beginning of 1871 to the end of 1891, several long periods of some unemployment occurred in N.S.W., namely 1871-72 (eight consecutive quarters), 1883-84 (six quarters), 1885-88 (twelve consecutive quarters) and after 1888.³⁰ On Coghlan's evidence, there were only nine years in which full employment

29. Australian Domestic Product, Investment and Foreign Borrowing 1861-1938/39, Cambridge, Cambridge University Press, 1962, p. 158.

30. T.A. Coghlan, Labour and Industry in Australia, Oxford, Oxford University Press, 1918, pp. 1425-1503.

conditions prevailed in N.S.W. for the whole year, namely, 1873-78, 1881-82, and 1890. In Victoria, there were only seven years of continuous full employment, 1873-74, 1881-84, and 1888.³¹ It is thus suggested that only in 1873-74 and 1881-82 could the demand for labour have been concurrently higher in both colonies than the available supply.³²

31. In only one other year, 1885, was a situation close to full employment evident for most of the year.

32. That there is a difference of opinion between Butlin and Coghlan concerning the state of employment in N.S.W. and Victoria from 1871 to 1891 is clear from the evidence despite the former's claim that "Coghlan's record for all the colonies provides a running commentary in much the same vein" (Investment, p. 390), that is, continuously high employment. Delving deeper into Coghlan's account reveals that, in Sydney, meetings of the unemployed were held in mid-1879, 1884 and 1886, followed by deputations to the government, a three per cent unemployment level existed at the time of the 1881 Census (and according to Coghlan 1881 was a year of high employment), and relief works were established in 1884, 1886, 1887 and early in 1888. In addition, Coghlan noted (p.1452) that "in 1885 public works expenditure of the Government amounted to £5,250,000 and in 1888 it fell to £2,700,000. This meant the throwing out of employment of 15,000 men ... the men could not find employment at all and crowded into Sydney to demand help from the Government." On Victoria, Coghlan noted that unemployment in 1875 led to the creation of a National Labour Bureau, that Government works in 1877 prevented an increase in unemployment, that street marches and deputations to the Government occurred in 1878 and 1879, that relief works were established in 1886 when unemployment was high. Growing unemployment in both colonies after 1888 was a feature of Coghlan's story.

Butlin, himself, admits that there was high unemployment in 1878, 1879 and 1885 in N.S.W. and in 1886 in Victoria (Investment, p.390) and A.R. Hall (The Stock Exchange of Melbourne and the Victorian Economy 1852-1900, Canberra, AN.U. Press, 1968) refers to unemployment in Victoria in 1875, 1878 and 1879 (pp.84-6), in N.S.W. and Queensland in 1884 (p.94) and again in Victoria in 1886, 1889 and 1890 (p.114) and in 1887 (p.130). Hall, however, may have obtained his information from Coghlan's book which he cites in his bibliography. Geoffrey Serle (The Rush to be Rich), considering Victoria in the 1880s, refers to a slight building recession in 1883 (p. 84), to seasonal winter unemployment in agriculture and building in the mid-1880s (p. 92), more specifically to unemployment in Melbourne in mid-1884 (pp. 93 and 95) and higher unemployment in the winters of 1885, 1886, and 1887, the last of which was serious (p. 93). From footnote references it appears that Serle could have obtained his data from the same sources as Coghlan, namely, contemporary newspapers and other similar material.

Butlin's argument concerning the influence of government poaching of labour from the private sector on wage rates relies heavily on the presence of excess demand for labour throughout the 1870s and 1880s, but the evidence available suggests that full employment may have been the exception rather than the rule. It is to be noted that his contemporary citations (Investment, pp. 397-8) were all made in years in which, according to Coghlan, high employment existed. Finally, what is clearly required is a more detailed investigation of the degree of unemployment existing at various times in these decades and its nature. Until then the "high employment" argument remains unproved.

The years in which the longest mileage of railways added in N.S.W. were 1877 and 1878 (both 90 miles), 1880 (115), 1881 (148), 1882 (282), 1884 (301), 1885 (114), 1886 (162), and 1887 (151); in Victoria 1874 (80), 1876 (116), 1877 (231), 1878 (102), 1882 (108), 1883 (207), 1884 (100), 1887 (137), 1888 (128), 1889 (181), 1890 (272), and 1891 (293).³³

Only in 1877 and 1878 could railway construction in N.S.W. in the years of high employment in the 1870s have had serious repercussions on the state of the labour market but in these two years low mileages were added in comparison with later years. In Victoria in the 1870s, it was not until 1876 and 1877 that the demand for labour by railway contractors could have made a mark on the labour market and, according to Coghlan, there was some unemployment in Melbourne at the time. The situation was different in 1874 but the mileage added, though rising, was too small to have made excessive demands on labour. It was during 1872-76 that the largest annual increases occurred in Butlin's N.S.W. money wage rate index for the whole twenty year period (especially in 1873 and 1876).³⁴ For Victoria, the largest money wage increases occurred in 1872 and 1873, in which years the demand for labour for railway construction could not have been as large as in later years. These wage rate increases in both colonies in 1872 and subsequent years could have resulted largely from the general upturn in economic activity following the export boom of 1871-73 and other expansionary factors rather than directly from the public poaching of labour from the private sector.³⁵ In other words, labour was obtaining its share of the increased productivity and incomes occurring during these highly prosperous years.

33. Using Butlin's figures, *Investment*, p. 324.

34. See *Australian Domestic Product*, pp. 157-8 and *Investment*, p. 396.

35. See Coghlan, *Labour and Industry*, Part IV, Ch. VI for an account of labour problems in these years.

Coghlan's evidence for the 1880s suggests that only in 1881-82 in N.S.W. and 1882-84 in Victoria did extensive railway construction and tight employment conditions coincide. Money wage rates did not increase rapidly in either colony during these years. Once again, the recovery of business activity in 1881 after a prosperous export season could also have exerted upward pressures on wages. In addition, it must be noted that immigration was rising to a peak in 1883, supplementing the available labour supply from internal sources. In N.S.W. the highest mileage added occurred in 1884, a year of large-scale unemployment produced partly by drought conditions in inland districts and partly by the completion of some railway projects. As well as employing labour to complete 301 miles of railway in that year, it was necessary for the government to introduce public works around Sydney to relieve the distress of the unemployed.

In Victoria in 1882-84, some strains may have been exerted on the labour market by the demands of railway contractors but once again there was no large increase in wage rates. In 1885, when railway building declined to 13 miles, the employment situation eased and in the following year unemployment became widespread. Nevertheless, it is clear that other forces were also at work to produce the 1886 recession. The evidence available is too meagre, however, to conclude that in much of this period railway construction prevented even greater unemployment and allowed the absorption of immigrants into the workforce without much delay but, if Coghlan's account of these years is correct, such a conclusion is possible.

It must be stressed that the major wage increases occurred in the 1870s and it is possible to argue on the basis of the comments above that railway construction had only a marginal influence on such increases - in both

decades. The private sector may have experienced labour market strains between 1881 and 1884 and the recovery of wage rates, however small, may have been a result but, on the available evidence, it seems that railway building could have exerted little influence on wages after 1883 as there appears to have been no sustained period of excess labour demand for the remainder of the 1880s when railway employment was relatively high.

Unfortunately it is impossible at this stage to determine the degree of unemployment in the colonies in the years in which it occurred, nor to identify the labour trades most severely affected. For these reasons, until more light is shed on the situation, conclusions relating to the employment situation and its effects on wage rates (in most years, the maintenance of the rates established in the boom years of the early seventies) must be tentative in nature. In any case, however, whatever wage increases resulted from the demands of the constructors for labour, they remained one of the costs of providing the continent with a comprehensive transport network and, in the last resort, the benefits accruing to the private sector directly and indirectly from these projects in the form of increased demand for goods and services may have vastly exceeded the costs, even if the rate of economic growth in some domestic sectors was somewhat retarded, a feature of the period which has still to be substantiated.

(b) Interest Rates

This argument is concerned with the dampening effects on private investment stemming from the methods of financing public investment expenditure. Butlin suggested that, by increasing customs duties, obtaining "revenue" from Crown land sales, and securing loans from internal and external sources, the governments increased interest rates for private borrowers and thereby restricted private investment.³⁶ The following

36. Investment, pp. 370ff.

discussion is restricted to public and private investment, overseas borrowing, and movements in interest rates. Butlin's argument depends to a certain extent upon short-run inverse movements in public and private investment and public and private borrowing from abroad.

It is impossible to determine whether annual private investment expenditure would have been higher if public investment and borrowing had proceeded more slowly. Although railway materials were mostly imported, the investment programmes required large annual expenditures in the colonies on labour, home-produced materials, and the acquisition of land. Such outlays had multiplier effects for the rest of the economy and contributed significantly to the desire of the private sector to expand output. In addition to such final demand, forward and backward linkages, the production of external economies in the pastoral, agricultural and other industries, provided incentives for the expansion of other private sector activities. The contribution of the railways to the urbanisation process at the time created considerable pressures for investment in residential, commercial, and manufacturing industries. Had railway construction been on a much smaller scale, private investment would also have been lower. The significance of these forces is impossible to determine precisely but they must be weighed against any braking forces exerted on private investment by the poaching of funds by the government sector for railway construction. Unfortunately no concrete conclusion is possible but it is clear that the incentives to private investment created by large-scale public investment expenditure must be taken into account.

To investigate this argument in greater detail it is necessary to study the movements in public and private investment and borrowing from 1870 to 1890 and any other factors which may have contributed to the fluctuations in the private investment series.³⁷

37. For the following comments, see *Investment*, pp. 35-38, 370-3, and the charts on pp. 384 and 386.

From 1872 to 1877, private investment expenditure increased more rapidly than public investment and was largely confined to the pastoral and agricultural industries. Pastoral investment was encouraged principally by the greatly increased incomes accruing to the industry from 1871 to 1874 and may have been largely financed out of retained profits, especially in the initial years. At the same time, agricultural investment arose out of the changes occurring in the regional distribution and the growth of the wheat industry in Victoria, a trend largely produced by the construction of railways into a number of counties during the 1860s and early 1870s.

Although private overseas borrowing declined in 1874-76, while public borrowing in London increased, the retained profits in the pastoral industry and the expansionary lending policies of the local commercial banks as their deposits rose rapidly may have largely accounted for the declining reliance on overseas sources of funds during these years. After the initial increases in bank deposit interest rates, upward pressures appear not to have been strong until 1878 while rates on advances, although high, remained relatively stable. It is evident that the banks experienced few periods of scarce loanable funds before 1878.

Private investment (mainly in the pastoral industry) played an important role in economic growth in the 1870s and rose to a peak in 1877. It then fell until 1880. At the same time public investment was rising. Private borrowing abroad increased considerably in 1877 but declined along with private investment until 1880, during which time government borrowing overseas rose to a peak. In 1877, internal sources of loanable funds were becoming scarce and the banks raised interest rates as they became increasingly confronted with balance of payments problems. Although the inverse movements in public and private borrowing from abroad may suggest that

government loans affected the ability of the private sector to borrow abroad and despite the high local interest rates at the time, it is also possible to argue that the fall in private investment, accounted for largely in the pastoral industry, may have been principally the outcome of low wool receipts and that the high interest rates charged locally may have resulted from the illiquidity of the banks' London branches as the trade balance deteriorated.

In 1880, record export receipts brought to an end the balance of payments difficulties. The rapid decline in interest rates on bank deposits and advances supports the argument that the external payments position contributed substantially to the trends in borrowing costs at the time. In 1881 there occurred another upturn in private investment which, because it was largely confined to the pastoral industry (despite the upward trend in residential construction), may have been more related to the improved conditions in the industry than to any change in public investment policy. At the same time, private borrowing abroad rose considerably despite a marginal reduction in government loans floated in London.

After 1881, a structural change was evident in the distribution of private investment to the extent that the large reduction in pastoral investment from 1882 to 1886 occurred at a time when residential construction was rising to a peak in 1883 and remaining high through 1884 and into 1885 - the building booms in Sydney and Brisbane being the major contributing influences. Total private investment appears to have declined in 1882 when pastoral investment fell and then it rose until 1884 in response to the building booms. Public and private capital inflow series exhibited inverse movements after 1882 with public foreign borrowing rising to a peak of approximately £13m. in 1883 and remaining high until 1886. Private foreign borrowing, on the other hand, declined sharply in 1883 and remained low until 1885. In 1886 it rose

again. Private borrowing overseas corresponded reasonably well with the trend in pastoral investment and appears not to have been influenced directly or substantially by the investment in residential construction which was largely financed from local sources at that time. It is apparent that interest rates could not have played a major role in reducing pastoral investment as they were much lower than the record levels of the late seventies even if they rose temporarily in 1883 and 1884. After 1883, exports declined progressively until 1887, a trend which could have produced a postponement of many investment projects in the industry. Furthermore, the decline in residential investment from 1883 to 1886 was related more to the end of the booms in Sydney and Brisbane than to a widespread shortage of relatively cheap investible funds.

From 1886 to 1890 ample funds existed for private investment. Indeed, in both the pastoral and housing sectors, so great was the inflow of foreign capital that much speculative investment occurred. Although public capital expenditure slackened slightly in 1887 and 1888, it proceeded at higher levels until the end of the decade. At the same time, there were small reductions in public borrowing abroad. Foreign funds poured into the private sector despite a downward trend in local interest rates.

The major point to note here is the possibility of factors other than government borrowing affecting movements in private investment during these two decades. Furthermore, there is no evidence to suggest that the short-run inverse movements of public and private investment during much of this period occurred because the private sector reacted to the effects of the demands for funds emanating from the public sector. At times, public investment may have risen in response to a decline in

private spending, for example, to finance relief works and occasionally to absorb unemployed labour in railway construction. In addition, it is apparent that the argument about the poaching of overseas funds from the private sector by the colonial governments is implausible.³⁸ Simon's estimates of British portfolio foreign investment reveal a large share of flotations on the London Stock Exchange for Australasia from 1876 to 1885 but, even so, between 1876 and 1880, the Antipodes attracted only 28 per cent of the total outflow from Britain, compared with 30 per cent recorded by North America. From 1881 to 1885, Australasia's share was 21 per cent and 15 per cent from 1886 to 1890.³⁹ It is true that much money entered the colonies in the form of bank deposits and deposits with other financial institutions but the fact remains that the total loans raised in the London capital market accounted for no more than 30 per cent of the total borrowing from that centre. This fact reduces the appeal of the argument that the Australian government loans limited the ability of the local private sector to borrow in Britain. In addition, the two sectors tended to borrow in different markets - the public sector on the Stock Exchange; the private sector by attracting foreign deposits short-term.

It should also be noted that, because the colonial governments raised a high proportion of their funds abroad, many private borrowers were able to obtain funds in the growing, if narrow, domestic capital market. These funds became available partly as a result of public expenditure in the colonies out of monies borrowed abroad. In addition, in a number of industries, retained profits provided yet another source of investible funds, the accumulation of which may not have been appreciably inhibited by public financial policies.

It is also argued that fluctuations in government deposits held in commercial banks had an adverse effect upon the ability of these institutions

38. Investment, p. 388.

39. Principally because of a doubling of South America's share to 28 per cent. See Matthew Simon, "The Pattern of New British Portfolio Foreign Investment", in J.H. Adler (ed.), *Capital Movements and Economic Development*, New York, Macmillan, 1967, Ch. 2.

to increase their advances to the private sector.⁴⁰ To a certain extent this may have been so but, perhaps for several reasons, too much importance has been attached to the effects of changes in government deposits. First, it must be realised that public expenditure from bank deposits, to the extent that it consisted of domestic expenditure, inevitably constituted a transfer of bank deposits from the government accounts to those of the private sector clients of the banks. This also applies to the loan funds transferred from London to be spent locally by the governments. From Butlin's Table 74,⁴¹ it can be seen that reductions in government deposits occurred in years in which private deposits rose sufficiently to more than offset the decline, except in 1877-78, and other forces were undoubtedly at work on private deposits at that time. In addition, increases in government deposits in 1866-67, 1868-69 and 1870-71 more than offset the reductions in private deposits in those years. Thus the dampening effects of the volatility of government deposits on the advances policies of the banks may have only occasionally been substantial. Furthermore, it was not necessary for the banks to charge the private sector higher interest rates on loans in order to pay interest on government deposits. Banking profits were so high throughout the 1870s and 1880s that, even after allowing for increases in their reserves, the commercial banks were still able to pay well over 10 per cent in dividends to their shareholders.

While in Victoria almost all the commercial banks spread fairly evenly the "burden" of carrying the government accounts, most of the banks in New South Wales and Queensland were unaffected in this way for the Bank of New South Wales and the Queensland National Bank held a virtual monopoly

40. Investment, pp. 381-7.

41. Investment, p. 382.

of their respective government's accounts. Fluctuations in government deposits and other irregularities in the public accounts could have affected the ability of the Wales to lend to the private sector somewhat, but the other banks in that colony were not directly involved, except briefly in the 1880s. In Queensland, the government accounts do not appear to have retarded the growth of the Queensland National nor prevented that bank from adopting (irrationally or otherwise) very liberal lending policies.⁴²

(c) Overall assessment of effects on wages and interest rates

To a certain extent, the influence of the colonial governments' investment in social overhead capital, predominantly railway construction, contributed to the strains which existed from time to time in the domestic labour and capital markets, but this would have been so of any similar expansionary programme in the private sector. Such tends to be a normal feature of a growing economy. Nevertheless, the discussion above extensively qualifies the conclusions of Butlin's analysis.

It is impossible to determine the effects of railway construction on wages and interest rates if private firms had built and operated the railways. Perhaps fewer lines would have been laid and less capital expenditure undertaken if profitability remained the major criterion for private construction. On the other hand, competition between private railway companies could have led each company to attempt to obtain a monopoly in certain regions of the colonies by being the first to provide such regions with rail services. As in the United States, private control may also have led to networks becoming highly unprofitable in the late eighties and nineties. It is true that the U.S. railroad companies imported foreign labour to a greater extent than the Australian governments at the time but they also raised much of their capital requirements on the London Stock Market and, at times, they found themselves in financial

42. See Geoffrey Blainey, *Gold and Paper*, Melbourne, Georgian House, 1958, Ch. 12.

difficulties. The same situation could have been experienced in Australia if private companies had built the local railways.

The provision of transport facilities at any time is generally a domestic venture and, during the late nineteenth century, was one which had important repercussions on almost all other industries. It altered the structure of the Australian economy substantially and undoubtedly provided many opportunities for large-scale private investment through its many links with other industries. If other sectors were confronted at times with higher labour and interest costs, it is also true that large-scale private transport investment would have had similar effects. What is clear is the inevitability of large-scale investment in transport during this period, and the railway was the most efficient and suitable type available at the time. It has not been proved, and perhaps never can be, that any increases in production costs which may have occurred in other industries were not more than offset by the substantial benefits which accrued to the colonies from the construction of the railway networks, but the possibility is credible.

Lack of Incentive to Diversification of Industries

Butlin's argument is contained in the following:

"With foreign financing, the trading economy of Australia could receive a transfer of resources in the form of an inflow of labour, increased commodity imports, reduced exports or reduced import-replacement production. Subject to the capital requirements of migrants, the more the transfer process concentrated on migration of labour, the less would be the tendency for wage-rates to rise in response to expanding investment expenditures. By contrast, with a relatively low migrant intake and the more the transfer process was concentrated on goods and equipment, the greater was the pressure on wage-rates and the smaller the stimulus to domestic productive activity; with domestic costs rising relatively to the outside world, export production and import replacement tended to be retarded and the gains from possible external economies offset."⁴³

43. Investment, p. 297.

It is assumed that Butlin was concerned with the transfer of productive factors out of export and import-competing industries and from abroad into railway construction rather than with the "real" transfer of capital from external sources, that is, the "transfer problem". There are several debatable points in this argument.

Given Butlin's assumption of full employment and his arguments concerning the poaching of labour and capital, his remarks on wage rates are acceptable but, for several reasons, it can be argued that the transfer of resources into railway construction may not have been as detrimental to economic growth as Butlin asserted. First, full employment was not continuously maintained throughout the whole period of heavy railway construction, at least in N.S.W., Victoria, and South Australia - as argued above. Second, although all colonies except Queensland refrained from following assisted migration schemes during the 1880s, the large inflow of unassisted immigrants could have aggravated the excess supply of labour which existed from time to time, especially in the cities, for example, in Victoria in 1879 and 1886.⁴⁴ Third, Crowley's estimates reveal that the largest annual inflows of British migrants occurred in years of full employment, namely, 1883 and 1884, thus relieving somewhat any pressures exerted on the labour market.⁴⁵ Finally, some immobility of labour existed at the time. Unemployment often tended to be high in the cities at the same time as excess demand for workers existed in country areas. It is by no means apparent, therefore, that transfers of labour into railway construction significantly affected other domestic industries adversely. At the same time, although little evidence is available, it is

44. Could the absence of assisted migration in most colonies have partly at least reflected the state of the labour market during these years?

45. F. Crowley, "The British Contribution to the Australian Population, 1860-1919", University Studies in History and Economics, 1954, p. 84.

possible that some workers employed by the railway contractors came from the rural industries, for example, the pastoral workers becoming redundant with the introduction of labour-saving innovations, workers previously employed in constructing fences when this employment declined somewhat in the eighties, and workers such as shearers and other seasonal workers who were required by the rural industries for only half each year (or less). No doubt there were some repercussions on other industries, but this was to be expected whenever any domestic industry was undergoing expansion. The benefits of the large-scale railway networks would have to be offset against the dampening effects of temporary labour shortages in the relatively few years of excess demand before an adequate assessment is made.

It cannot be maintained that the export sector failed to expand during the 1870s and 1880s. Production in physical terms of wool and wheat rose during this period, especially wool, but because of the downward trend in wool prices and the increasing demand at home for wheat, income from export sales tended not to increase appreciably, at least in the 1880s. It is true that the export sector was not diversifying rapidly in the 1880s but this may have resulted not so much from the emphasis on railway construction but more from the excessive concentration on the expansion of the wool industry,⁴⁶ and the need for technological and other improvements in other potential exporting industries. Butlin argued that only the pastoral industry was in a position to expand its stock of capital assets when government investment forced higher labour and capital costs on the private sector. But at the time agriculture

46. See W.A. Sinclair, "Aspects of Economic Growth, 1900-1930," in A.H. Boxer (ed.), *Aspects of the Australian Economy*, Melbourne, M.U.P., 1965, pp. 95ff.

was confronted with declining returns and manufacturing was experiencing large difficulties.⁴⁷ Ignoring manufacturing for the moment as it cannot be considered as a possible export industry at this time, agriculture did expand in the 1880s in Victoria (into the Wimmera) and this expansion was substantially aided by railway penetration of this area. But the wheat industry in general had to await the development of new improved varieties of seed before it could amass a sizeable surplus of grain for export. Similarly, the meat and dairy products industries were awaiting the introduction of important innovations which were to increase their export potential in the following decade. Mining was also declining but not because of railway investment. It was only the wool industry which could have added most to exports and the wool industry (along with agriculture) was becoming less labour intensive. The other export industries contributed increasingly to total exports after their technological difficulties were overcome and when new mineral discoveries occurred - in the 1890s and 1900s. Finally, it cannot be argued that the pastoral industry failed to receive its share of investible funds during this period. In fact, as Butlin points out, excessive expansion occurred in the industry in the second half of the eighties.

Import-replacement in production during the 1870s and 1880s was high in products obtained from the rural sector such as butter, wheat and sugar, but the process was somewhat retarded in manufacturing during the 1880s. Import-competing production in manufacturing appears to have occurred to a greater extent in the 1870s but it is necessary to note that import prices were falling in the eighties. It was, perhaps, not so much rising labour costs which hampered the growth of import-competing manufacturing industries at the

47. N.G. Butlin, *Investment*, p. 404.

time but the growing competitiveness of imports as overseas prices declined and there were certain advantages in being able to obtain cheaper products from abroad - for the economy as a whole. Furthermore, manufacturing investment may not have been adversely affected from a lack of funds due to the borrowing programmes of the colonial governments since much of the investment in manufacturing undoubtedly came from retained profits.⁴⁸ There were several factors accounting for the changes in export and import-competing production in the 1880s and, even if Butlin's arguments carry some weight, they do not take into account other important influences.

The other aspect of Butlin's argument concerns the real transfer of capital from Britain to the colonies. One of the benefits of trade and capital inflow, according to traditional economic theory, is the ability of a country to receive in its imports a large volume of capital goods which, according to comparative advantage theory, cannot be produced as economically at home as abroad. A large part of the government loans was transferred to the colonies in the form of railway equipment but some was spent in the colonies on labour and raw materials obtained from local sources. The transfer of this portion of the government loans and the funds borrowed by the private sector was effected through increased imports for the private sector, including a large variety of capital goods, the receipt of which contributed to the growth-generating aspects of foreign trade. Butlin tends to argue, however, that the importation of capital goods as a substitute for domestic production of these commodities was relatively uneconomic. In terms of real income, the benefits of

It is true, however, that if Butlin is correct about the poaching of labour and the effects on domestic wages (preventing them from falling, though, for they did not rise appreciably after 1875) profits may have been squeezed as the local producers were increasingly confronted with declining import prices. As a result, their ability to invest from retained profits would have been reduced. But there were still funds available to them, for example, advances from the commercial banks.

international specialisation of labour and the arguments of the comparative advantage doctrine suggest that the relatively high costs of domestic production arising out of the comparatively small size of such local operations would not have been advantageous to the country as a whole. Furthermore, Butlin argued that the colonies would have benefited to a greater extent if the real transfer of capital had been effected more through the importation of labour (to depress wage rates) than through the movement of commodities. What must be realised, however, is that the "transfer problem" is a monetary one and can only be solved through the movement of commodities in the same direction as the monetary flows of funds, unless opposing flows of commodities are reduced in value. Finally, it is debatable in terms of income distribution and welfare if the maintenance of real wages in the 1880s is regrettable. The arguments cited above require greater substantiation than what has so far been presented by Butlin.

The Overall External Economy Effects

The conclusion which emerges from the discussion above is that, while it is true that there were certain external diseconomies associated with railway investment in eastern Australia in the 1870s and 1880s, their importance has been overstated. It was inevitable that, as in all other countries in which massive railway investment occurred at the time, the adoption of the new transport technology led to large structural changes in economic activity and that there were costs associated with the benefits accruing from such ventures. In Australia, however, when the long-run growth of the economy is considered, it is apparent that the external economy effects of railway construction were more important than Butlin's analysis tends to suggest.

THE PROFITABILITY OF THE RAILWAYS

Butlin's case for maintaining that railway investment was not aimed at producing profitable railways can be discussed in terms of his four main arguments:

- (a) "Construction continued rapidly regardless of revenue from transport services; competing and duplicate freight services reduced the marginal efficiency of transport capital; parochial pressures encouraged highly wasteful outlays; ..."49

This argument may be partly true but it may also conceal as much as it reveals. It is true that some railway building proceeded according to intercolonial rivalry, but an overall view of railway investment as illustrated above shows that the motive of intercolonial rivalry has been overstressed. It should also be pointed out that, in considering the marginal efficiency of transport capital, expected annual future returns over a long-run period must be considered. Developmental railways, as noted above, had to wait for rural industries to become established in areas through which the lines were laid before expected returns could be realised and a period of one to five years was certainly not long enough. In determining the marginal efficiency of capital of the railways, the expected life of the asset may be many decades, but an assumption would have to be made of the time period over which annual future returns would be discounted and the costs spread. It would not be as short a period as apparently proposed by Butlin in (d) below.

- (b) "Victorian railway investment of the eighties added nothing to the net revenue of the railway system, a fact which is, perhaps, not surprising in view of the purpose of this investment to oppose N.S.W. entry."50

Contrary to this view it can be argued that in Victoria in the eighties the implications of developmental lines were very strong. Chart 1 compares revenue and expenditure between 1880 and 1914. Until 1904, however, it is impossible to make allowance for depreciation of railway assets and thus, before that year, net revenue is the difference between total revenue and expenditure, the latter including working expenses but not interest charges. Net revenue minus interest charges on railway debt is also shown. On this basis, it can be seen that it was not until the 1890s that a serious deficit occurred in the railway accounts.⁵¹

49. Ibid., p. 298

50. Ibid., p. 368.

51. It should be noted that, from 1889 on, reductions in freights aimed at encouraging wheat and dairying production reduced revenue by an estimated £50,000 each year. In addition, had depreciation been allowed for, a deficit would have occurred in most years although it is impossible to gauge the reactions of officials to such deficits and attempts to eliminate them.

Table 1 shows that in 1886 29 per cent of the total mileage of railways constructed in Victoria had been opened to traffic in the previous five years and that, by 1891, 37.2 per cent of the total mileage had been brought into use after 1886, 21.7 per cent after 1888, much of which could be considered developmental in character, including the lines into the dairying districts of Gippsland and the western counties of Hampden, Heytesbury and Villiers, the extensions into the wheat counties (mainly branch lines) of Moira, Bogong, Rodney, Borung, and the initial entry into Lowan in the Wimmera.

Table 1: Victorian Railway Construction, 1861-1891

Year	Total mileage end of year	Miles laid in year indicated		Miles laid in two previous years		Miles laid in three previous years		Miles laid in five previous years	
	Miles	Miles	% ^a	Miles	% ^a	Miles	% ^a	Miles	% ^a
1871	274.9							1.5	0.5
1876	713.4	98.6	13.8	158.7	22.2	256.5	36.0	438.5	61.5
1881	1241.0	47.2	3.8	121.8	9.8	194.4	15.7	527.5	42.5
1886	1745.5	73.0	4.2	90.2	5.2	190.4	10.9	504.5	28.9
1891	2781.7	111.2	4.0	456.0	16.4	602.7	21.7	1036.1	37.2

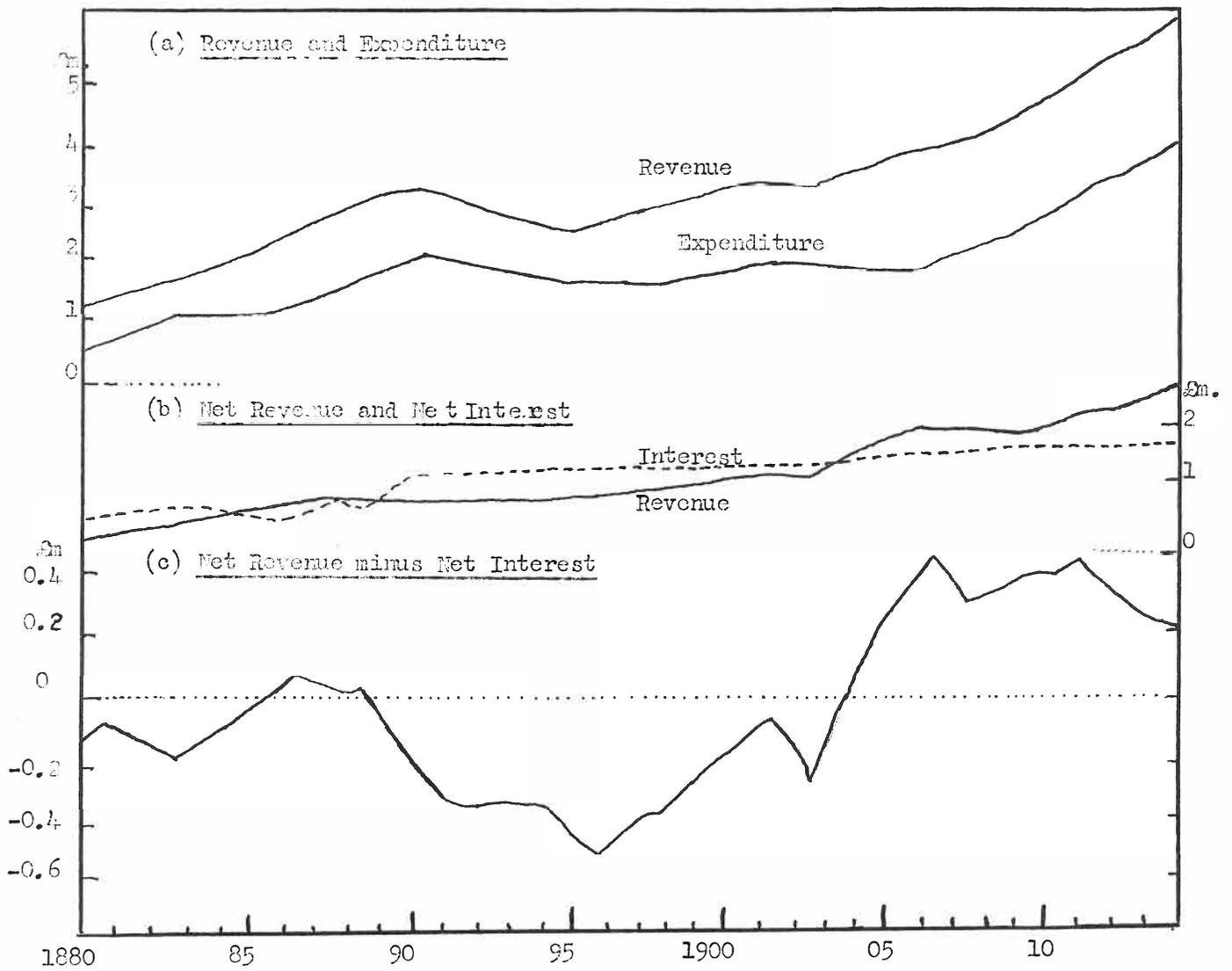
Note: a. Percentage of total mileage.

Source: Victorian Legislative Assembly, Papers presented to Parliament, 1914, Vol. II. Victorian Railways - Report of the Commissioners for the financial year ending 30th June, 1914, pp. 47ff.

It is extremely difficult to consider the "long-run" as terminating at the end of "the second half of the nineteenth century"⁵² when almost 40 per cent of the Victorian railway mileage existing in 1891 had been constructed in the previous five years (22 per cent in the previous three years). These lines could not have been expected to contribute substantially to railway revenue either in the 1880s or in the following decade when rural industries were depressed as the result of droughts and low export prices. Government subsidies to the primary industries in the form of freight reductions also reduce the

52. Butlin, *Investment*, p. 399.

Chart 1: The Victorian Railways, Annual Accounts Series, 1880-1914



Note: Net Revenue = Revenue minus Expenditure.
 Sources: Annual Reports of the Victorian Railways.

revenue of the railway network.

It was not until the end of the 1895-1902 period of great rainfall deficiency, to use Foley's term,⁵³ that the expansion of rural industries produced the expected returns from the lines constructed in the late 1880s. After 1903 the network recorded ever increasing surpluses, despite additional concessions made to the rural sector in the form of reduced freight rates, which tended to lower total revenue, and despite the increased reserves for pensions, compensation and depreciation.⁵⁴

It is therefore possible to disagree with Butlin on the point he stressed. Not all investment in Victorian railways was directed towards opposing N.S.W. entry and the investment projects completed in the eighties produced large net additions to the revenue of the system when rural producers were able to take advantage of the services provided, that is, when productive conditions recovered in the early 1900s.

- (c) "Thirty years later, in the twenties, this trunk skeleton was turned to substantial advantage when a network of branch lines criss-crossed the main agricultural and mixed farming areas."⁵⁵

As noted above, it was during the years 1904 and 1914 that railway revenue reflected the benefits from the network constructed in the 1880s in Victoria (and in other states, even if to a lesser degree in some) and, during these years, branch line construction intensified in a number of states. The railway system aided substantially the return of prosperous conditions to agriculture and dairying and allowed these industries to expand rapidly at the time. Contrary to the above argument on the 1920s,

53. J.C. Foley, Droughts in Australia - A Review of Records from the Earliest Years of Settlement to 1955, Commonwealth Meteorological Bureau, Bulletin No. 43, 1957, especially Figures 12 and 13.
54. The Railway Commissioners estimated that the freight concessions granted in 1911 reduced revenue by £368,000 in that year and that in 1914 the concessions to the general public and staff reduced net revenue by £768,000.
55. Investment, p. 399.

moreover, it can be argued that these industries encountered diminishing returns after World War I and suffered the same excesses of investment that the pastoral industry had experienced in the eighties.⁵⁶ It is also apparent that the period of waiting, which was lengthened by the depression of the nineties and the series of droughts which followed, came to an end in 1903 and not in the 1920s.

- (d) "Before 1900, no such return is visible. The effort of the construction workers between 1860 and 1890 was directed not for their own benefit but for the welfare of later generations. In examining the long-run relations between government and private sectors we are not concerned with this secular development in which the contribution of government was unanticipated and inseparable from a combination of many other elements. We concentrate, rather, on the long-run interrelations during the second half of the nineteenth century."⁵⁷

As the analysis above implies, it is difficult to accept this version of "the long-run period" which excludes events after 1900. In 1891, of the 8,927 miles of railway open to traffic in the four eastern mainland colonies, 28 per cent (38 per cent in Victoria) had been opened in the previous five years.⁵⁸ The same conclusions arrived at above for Victoria can be applied to this region as a whole. The other colonies also experienced depressed conditions during the nineties and inevitably the effects of the railway projects completed in the late 1880s on economic progress were not realised until after 1902, although the railway planners of the eighties could not possibly have foreseen the problems of the nineties, in which decade they expected their investments to begin to pay off. They were not catering solely for future generations. As noted above, the developmental nature of many lines constructed in the 1860s and 1870s was also much more important at that time than Butlin has argued.

Finally, it should also be noted that Coghlan's summing up of Victorian railways was somewhat of an exaggeration.

56. See Sinclair, *loc. cit.*, pp. 102-4.

57. *Investment*, p. 399 (my italics).

58. Using Butlin's figures in *Investment*, p. 324.

"Some of these cockspur railways as they are called yielded so little traffic, either goods or passenger, that trains were not run upon them and to save the cost of maintenance, the rails and other removable parts of the permanent way were taken up and used elsewhere."⁵⁹

In addition to two miles of "racecourse" lines, only the Dunkeld-Penshurst line (16 miles) had been dismantled by 1914. Another 31 miles remained closed to traffic at that time but only the Lancefield-Kilmore line (18 miles) was significant.⁶⁰ There is also uncertainty concerning the timing of Coghlan's observation - whether it was made before the wheat industry took full advantage of the available railway network or after.

PUBLIC INVESTMENT AND THE BALANCE OF PAYMENTS

Butlin stressed the dampening effects of public investment on production in export and import-competing industries in the 1880s, the rising foreign interest bill and government imports which had to be financed by exports and capital inflow. The balance of payments problem intensified as the eighties progressed for the value of exports failed to rise appreciably and in some years declined absolutely while the value of imports and interest payments abroad increased rapidly. So long as capital inflow increased from year to year, the growing current account deficit was offset by a favourable capital account balance, but when investment inflow levelled out and inevitably declined, drastic changes were necessary in the current account - especially a rapid reduction in imports, which naturally occurred.

The colonial governments, by increasing their foreign interest payments and by maintaining high annual expenditure on foreign materials, contributed to the growing imbalance in the international payments of the

59. Labour and Industry, pp. 1419-20, cited by Butlin in Investment, p.357.

60. Report of the Railway Commissioners, 1914, pp. 47-50. The total length constructed by 30th June 1914 was 3,888 miles.

colonies during the decade. As capital was a relatively scarce factor of production at home, however, it was inevitable that the governments borrowed in overseas capital markets, as did many other foreign governments at that time

But perhaps two major aspects to note on Australia's balance of payments in the 1880s are the movements in the terms of trade and the nature of export production. As import prices (and transport costs) were declining throughout this decade, the climate was not favourable for promoting import-replacement production, especially in those industries in which the comparative disadvantage of producing the commodities locally was greatest. In one respect, declining import prices worked in Australia's favour, for a larger volume of commodities could be obtained from abroad for the same amount of foreign exchange than in previous years. Unfortunately for the colonies, however, export prices were falling faster than those of imports and the commodity terms of trade were continuously deteriorating, a factor which represented a major contributing influence on the widening current account deficit.⁶¹

It could be argued, for example, that had export prices remained stationary at the levels recorded in the mid-seventies or even followed a slightly rising trend, exports may have played a more significant role in financing imports and foreign income payments. Exporters' demands for loanable funds would have been less intense during periods in which their incomes were high and thus capital inflow may not have been so large. It is doubtful if imports would have changed radically from the levels attained simply because exports were higher and foreign investment somewhat lower. It was the inability of export industries to increase their receipts fast enough to finance the interest payments and capital repatriation in addition to current imports that

61. In addition to the adverse seasonal conditions which periodically restricted export production.

presented the colonies at the end of the eighties with a need to restructure their balance of payments. Largely this was due to the movements in export prices and was outside the sphere of Australian influence and certainly not due to an inability of pastoralists to expand wool production.⁶² Had wool production not increased substantially, the balance of payments would have deteriorated and imports could not have reached the levels recorded. Wool production increased largely because of the ability of pastoralists to finance their expansionary plans from borrowed British funds.

As far as the government influence on the balance of payments at the time is concerned, the costs of government imports and interest commitments in the relatively short-run period have to be weighed against the benefits accruing to the economy both in the short- and the long-run, and in the 1903-14 period in particular. In this later period, export production was allowed to increase rapidly and substantially because the railway network required at the time had already been constructed. In other words, although public investment in the eighties may have contributed to the payments problems, it also permitted the restructuring of the balance of payments in later decades by promoting the rapid growth and diversification of exports which had not been possible in the 1880s.

CONCLUDING REMARKS

In contrast with Butlin's conclusions, it is suggested that railway construction programme after 1860 were generally conducive to the spread of external economies among other industries. One could assume

62. As noted above, the lack of diversification of export production in the 1880s resulted largely from technological difficulties rather than from over-concentration of investment in wool. Declining prices also contributed significantly to the low values of exports of other products as well.

that Butlin's period of analysis effectively ended in 1891 because of the dampening effects of declining overseas prices in the 1890s, adverse seasonal conditions, and the technical constraints confronting agriculture, dairying, and the meat industries, and because the incentive to invest was restrained until after the 1902 drought, by which time most of these unfavourable circumstances had disappeared. In many respects, therefore, the external economies offered by railway construction in the 1880s were potential only but they were reaped with a vengeance between 1903 and 1915.

There is some truth in all Butlin's arguments but the conclusion which emerges from the discussion above is that he overstated his case and that he underestimated the importance of several aspects of railway construction, in particular, the developmental nature of the transport investment. On the basis of the foregoing analysis the conclusion is that, despite some diseconomies and other shortcomings associated with the construction programmes, the contribution of the railway investment expenditure to Australian economic growth between 1860 and 1914 was substantial.

WORKING PAPERS PUBLISHED TO DATE

1. "The Origins of Cost Benefit Analysis in the Work of Bentham and Smith", D.P. Doessel, November 1973.
2. "A Test for the Goodness of Forecasts from a Time Series Model", M.N. Bhattacharyya, May 1974.
3. "Deceleration of the British Economy, 1725/30 - 1745/50", A.J. Little, May 1974.

"The Socio-Economic Environment of Firms and Economic Analysis: A Case Study in a Queensland Country Town", R.C. Jensen and R. Widdows, May 1974.
5. "Seasonality in Australian Capital Markets: Market Efficiency and Empirical Issues", R.R. Officer, June 1974.
6. "Spatial Equilibrium Analysis, Social Welfare and Rural Policy: The Case of the Wool Marketing Innovations and Reforms", P.A. Cassidy and J.C. Kilminster, August 1974.
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