

## THE REVERSAL OF FORTUNE IN ARGENTINA

Exploring industrial labour productivity in comparison to Australia, 1907-1973<sup>1</sup>

### Abstract

*The dramatic decline of Argentina in the world income distribution during the twentieth century poses a major puzzle in the historical growth literature. This exceptional case of divergence is usually interpreted as the result of a failed transition from a successful agrarian export economy into a high-productive industrial economy, but explaining this failure is not that straightforward. We study the development of industrial labour productivity in Argentina in comparison to Australia to obtain more insight into the timing of this failed transition. We estimate that Argentina's industrial productivity was circa 15 per cent lower than Australia's on the eve of WWI, and that productivity levels diverged continuously thereafter up to the 1970s, with the exception of the 1940s. Our tentative explanation focuses on the role of political elites serving the oligopoly interests of a handful of well-connected entrepreneurs, in contrast to the deliberate efforts of consecutive Australian governments to promote broad-based industrialisation via targeted fiscal reforms, educational investments and social policies.*

Argentina's economy offers one of the best examples of comparative retrogression in the twentieth century and is, for this reason, a much studied case among historians and economists interested in the long-term processes of global convergence and divergence.<sup>2</sup> At the start of the last century, Argentina was one of the richest countries in the world. According to historical GDP per capita levels, it ranked 10th on the eve of WWI, just behind Denmark, Canada

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2. P.H. Lewis, *The crisis of Argentine capitalism* (Chapel Hill 1990); A.M. Taylor, 'External dependence, demographic burdens and Argentine economic decline after the belle époque', *The Journal of Economic History* 52 (1992) 907-936. For the vast literature on long-term comparative income development, we refer to the seminal studies of Simon Kuznets, *Modern economic growth: rate, structure and spread* (New Haven 1966) and Angus Maddison, *Phases of capitalist development* (New York 1982).

and Belgium, and just ahead of France, Sweden and Austria.<sup>3</sup> At the end of the century, Argentina had fallen to the 38th position in the global ranking, with income levels comparable to countries like Latvia, Malaysia and Venezuela. With a per capita GDP of \$8,544 in the year 2000 (in 1990 international dollars), Argentinean income levels had dropped to just 37 per cent of Denmark's level (\$22,975). Argentina is still one of the richest countries in Latin America, but its annual growth rate of 0.51 in the period 1900-2006 was lower than that of any other Latin American country for which data is available. Argentina has now been surpassed by its neighbour Chile, while the emerging market economy of Brazil is currently growing much faster than Argentina ever grew in the previous century.<sup>4</sup>

Although there are serious doubts regarding the reliability of historical GDP estimates, few scholars would actually dispute the fact that Argentina was the most prosperous Latin American country at the start of the twentieth century.<sup>5</sup> Argentina had the most dynamic export sector, the largest inflow of foreign capital, the largest railroad network and the largest inflow of European immigrants, who were attracted by real wages that were considerably higher than those in Southern European countries like Italy or Spain.<sup>6</sup>

In order to understand Argentina's 'reversal of fortune' during the twentieth century, the literature tends to focus on two interrelated issues. First, when did the relative decline begin exactly? Can we observe the start of the decline already around WWI, during the Great Depression, during the Perón regime from 1946 to 1955, or only after the Videla coup in 1974? Second, what were the major determinants of the reversal? The failure to transform a highly successful, agricultural export-led growth model into a high-tech, high-productive industrial economy is widely cited as a key explanation for Argentina's disappointing growth performance, but why this transition proved so problematic is a far more complicated question.<sup>7</sup>

Research has been devoted to detailed analyses of industrial output, capital accumulation, foreign direct investment and economic policy, especially

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3. A. Maddison, *The world economy: historical statistics*, OECD (Paris 2003) 144.

4. In the latest edition of the World Economic Forum's *Global competitiveness report 2009-2010* (Geneva 2009), Argentina's economic competitiveness even ranked 85th out of 133 countries.

5. G. della Paolera, and A.M. Taylor, *A new economic history of Argentina* (Cambridge MA 2003).

6. K. O'Rourke and J.G. Williamson, *Globalization and history. The evolution of a nineteenth-century Atlantic economy* (Cambridge MA 1999); L. Bértola, J.G. Williamson, 'Globalization in Latin America before 1940' in: V. Bulmer-Thomas, J.H. Coatsworth and R. Cortés Conde (eds.) *The Cambridge economic history of Latin America Volume ii: The long twentieth century* (Cambridge MA 2006) 11-57.

7. D. Rock, *Argentina 1516-1987. From Spanish colonization to Alfonsín* (Berkeley 1987); V. Bulmer-Thomas, *The economic history of Latin America since independence* (Cambridge 2003).

concerning the transition from laissez-faire towards import substitution industrialisation policies.<sup>8</sup> A systematic comparative analysis of Argentinean industrial labour productivity, however, has never been conducted. This study aims to fill that gap. A comparative productivity analysis can generate new facts about the timing of the relative economic decline and takes us straight to the heart of the matter: the characteristics and determinants of hampered industrial development.

We adopt Australia as a mirror country. We are not the first to notice the remarkable similarities in the economic structure of Argentina and Australia.<sup>9</sup> Both economies were proto-typical settler economies, receiving a large number of European immigrants attracted by high wages and abundant land resources. Both countries overcame the large distance to world markets by specialising in agricultural staple products such as wool, meat and wheat. Australia, favoured by substantial gold deposits, was the world's richest country in the late nineteenth century according to Maddison, but like Argentina still had to make the transition towards a competitive industrial sector to endorse sustained economic growth in the twentieth century. But despite comparable initial conditions, Australia did much better than Argentina.

Our results will demonstrate that the divergence in industrial labour productivity was already apparent on the eve of WWI and continued thereafter. The productivity gap of circa 15 per cent in 1914 rose to 33 per cent in the mid-1930s. With the notable exception of the 1940s, productivity levels also widened during most of the post-war period up to the 1970s. In the second part of this study we develop the argument that the ultimate causes of Argentina's failed transition to a high-productive industrial economy in the twentieth century reside in the disinterest of its political elites to foster a broad-based process of industrial development. Industrial policies were tailored to a handful of big manufacturing enterprises owned by well-connected businessmen, while neglecting the needs of grass-roots manufacturing firms to build up competitive capacity (scale, access to capital, worker skills) to raise produc-

8. Della Paolera and Taylor, *A new economic history of Argentina*.

9. D.C.M. Platt and G. di Tella, *Argentina, Australia & Canada. Studies in comparative development, 1870-1965* (Oxford 1985); G.W. Wynia, 'Opening late-industrializing economies: lessons from Argentina and Australia' *Policy Sciences* 23 (1990) 185-204; J.C. Korol, 'Argentina development in a comparative perspective', *Latin American research review* 26 (1989) 201-212; A.M. Taylor, 'Three phases of Argentine economic growth', *NBER Working paper series on historical factors in long run growth. Historical paper no. 60* (Cambridge MA, 1994); R. Cortés Conde, *La economía Argentina en el largo plazo* (Buenos Aires 1997); I.W. McLean and A.M. Taylor, 'Australian growth: A Californian perspective', in: D. Rodrik (ed.), *In search of prosperity. Analytic narratives on economic growth* (Princeton 2003) 23-52; I. Sanz-Villaroya, 'The convergence process of Argentina with Australia and Canada: 1875-2000', *Explorations in Economic History* 42 (2005); P. Gerchunoff and P. Fajgelbaum, *¿Por qué Argentina no fue Australia? Una hipótesis sobre un cambio de rumbo* (Buenos Aires 2006).

tivity. This stands in sharp contrast to the deliberate efforts of consecutive Australian governments to invest public resources in the training of industry-specific human capital as well as the establishment of an equal playing field for domestic market competition.

### Argentina's relative income decline, 1900-2000

In *¿Por qué Argentina no fue Australia?* Gerchunoff and Fajgelbaum discuss the different phases of comparative development in Argentina and Australia from the late nineteenth century onwards. The authors argue that for the period up to 1929, Argentinean per capita income levels converged with those of Australia. But during the Great Depression a long-term tendency of income divergence set in, which has continued up to the present. Gerchunoff and Fajgelbaum subdivide the post-1929 years into two eras: from the 1930s to the mid-1970s the divergence in income levels was moderate (*divergencia débil*) and also partly explained by the fact that the Argentinean population grew faster, lowering the overall participation rates. In the mid-1970s, however, the era of strong divergence (*divergencia fuerte*) began, as the stagnation of Argentine GDP per capita can almost entirely be explained by a stagnation of labour productivity levels in a wide range of economic sectors.<sup>10</sup>

Figure 1 illustrates these observations, showing Maddison's GDP per capita series of Argentina and Australia for the twentieth century.<sup>11</sup> Between 1929 and 1975 Australian income per person increased at an average annual rate of 0.96 per cent, compared to 0.67 per cent in Argentina. Between 1975 and 2002 the Australian economy recorded an average growth rate of 0.55, while the Argentinean economy actually shrank, by -0.09 per year.

This periodisation is not undisputed, however. Based on his own per capita GDP estimates, Cortés Conde locates the definitive break point vis-à-vis Australia and some other OECD countries in the early post-war era.<sup>12</sup> Gallo also places the definitive break in GDP trends in the post-wwII years, linking the relative income decline to the disruptive ISI policies (import substitution industrialisation) of the Perón government (1946-1955).<sup>13</sup> Sanz-Villaroya applies more sophisticated econometric techniques to identify 'structural breaks' in the GDP series of Cortés Conde and Harriague and concludes, to

10. Gerschunoff and Fajgelbaum, *¿Por qué Argentina no fue Australia?*, 23.

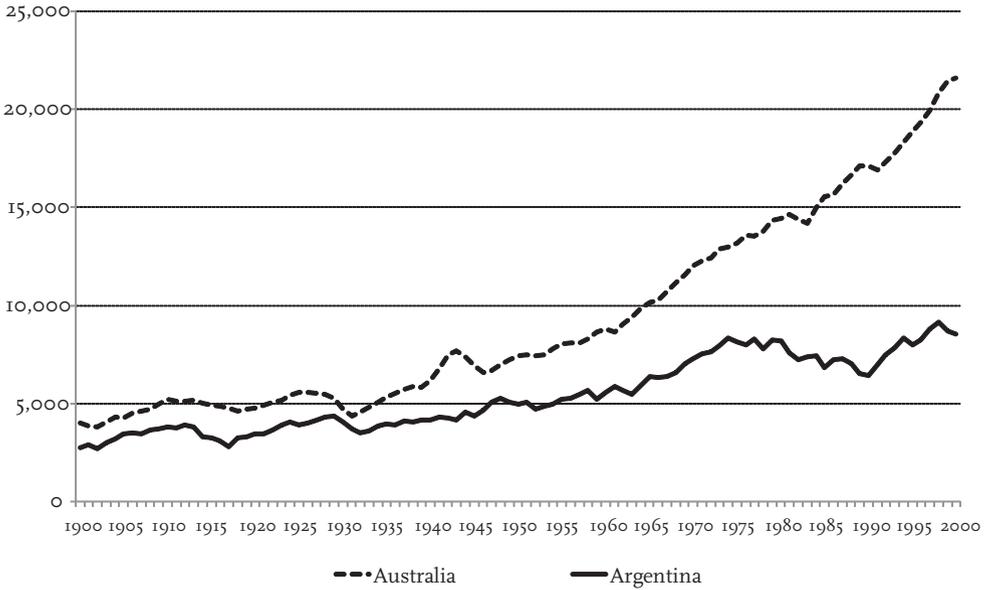
11. Maddison, *The world economy: historical statistics*.

12. R. Cortés Conde, *La economía Argentina en el largo plazo*. See also R. Cortés Conde and M. Harriague, *Estimaciones del producto interno de la Argentina*, Documento de trabajo, departamento de economía (Buenos Aires 1996).

13. A. Gallo, *Argentina-Australia: Growth and divergence in the twentieth century*, XIVth International Economic History Congress. Session 97: Settler economies (Helsinki 2006).

the contrary, that Argentina never really caught up with Australia and already started to lose ground in 1896. Between 1896 and 1975 the two economies developed more or less along parallel lines in terms of income levels. Sanz-Villaroya reaches a similar conclusion for the Argentina-Canada comparison.<sup>14</sup>

**FIGURE 1** GDP per capita, Argentina and Australia, 1900-2000 (in constant 1990 US\$)



Sources: Maddison 2003, pp. 88-89 and 142-144.

When we neglect the measurement problems involved in historical GDP series for a moment and consider Argentina’s relative income decline from a causal perspective, most scholars agree that the focus should be on the problematic transition of agrarian-based, export-led growth towards a high-productive and technology-intensive industrial economy. But from this point the views again differ. Some scholars argue that WWI established the major watershed, others emphasise the role of the Great Depression.<sup>15</sup>

Taylor argues that compared to other settler societies such as Australia and Canada the divergence must be placed after 1929, but when compared

14. Sanz-Villaroya, ‘The convergence process of Argentina with Australia and Canada: 1875-2000’, 451-452.

15. Firstly, those who stress the role of WWI: G. di Tella and M. Zymelman, *Los ciclos económicos argentinos* (Buenos Aires 1973); Cortés Conde, *La economía Argentina en el largo plazo*. Secondly, those who emphasise the Great Depression: C.F. Diaz Alejandro, *Ensayos sobre la historia económica argentina* (Buenos Aires 1983); A. Ferrer, *La economía argentina* (Buenos Aires 1996).

to a broader group of OECD countries, the divergence occurred directly after 1913.<sup>16</sup> Taylor distinguishes an early and a late variant of retardation. The early retardation hypothesis places great emphasis on the dramatic decline in capital accumulation after 1913, despite the maintenance of rather liberal economic policies (trade policies in particular). The impact of WWI was not only large because of the temporary loss of its key export markets in Europe, but also because of the sudden withdrawal of foreign capital. As Argentina's savings rate was approximately 5 per cent of total GDP versus 15 per cent in Australia, Argentinean entrepreneurs were much more dependent on the supply of foreign capital to develop new industries than their Australian counterparts.<sup>17</sup>

The late retardation hypothesis views the fundamental changes in economic policy orientation in the wake of the global economic crises as the essential break point. Only after 1929 did the Argentinean government move decisively towards more inward-looking, protectionist and interventionist types of economic policy. According to Taylor, the problem of low rates of capital accumulation became bigger during the 1930s and the decades thereafter. Scarce foreign reserves were siphoned off for popular manufactured imports and raw materials needed to supply the infant industries. This in turn raised the prices of capital goods, while prices for consumer products were kept artificially low. Taylor estimates that the average price level for machinery and equipment in Buenos Aires was about 2.5 to 3.3 times higher than the price level in two major US cities (Houston and Los Angeles) in 1962.<sup>18</sup>

Timing Argentina's relative decline thus depends crucially on one's perspective. Which countries do we compare it with? What do we consider to be more important, a structural break in GDP figures, which may be symptomatic, or the underlying causes of the trend break, which are obviously more difficult to identify? Indeed, there is a difference between the effects of economic or political shocks, which are by definition temporary and easy to pin down on a time line, and the deeper causes of relative decline which are usually not directly translated in GDP figures and may have been present for a long time already. An analysis of comparative industrial labour productivity has the advantage of combining these two aspects: it allows us to identify the timing of the growth retardation more precisely (i.e. retarding productivity levels), when they are still masked by favourable GDP growth rates as a result of agrarian export dynamics. These insights bring us closer to the root causes of the failed agrarian-industrial transition.

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16. Taylor, 'Three phases of Argentine economic growth', 1-3.

17. *Ibidem*, 7-8.

18. *Ibid*, 10.

### Comparing industrial labour productivity in Argentina and Australia, 1907-1973

We collected data from industrial censuses and surveys to construct time series of labour productivity starting as early as data allow (1907). Our series ends at the point where Argentina's relative income decline is undisputed (1973). Within industry we focus on the development of labour productivity in the manufacturing sector because it is the largest and most rapidly growing sector in both countries during the period under consideration. Besides, contrary to mining or utility firms, manufacturing firms are primarily occupied with adding value to raw materials and intermediate goods in various stages of product elaboration along the commodity chain. The technological capacity and organisation procedures required to transform primary products into more sophisticated products with a higher value for consumers is fundamental to economic growth.<sup>19</sup>

Table 1 illustrates the rise of the manufacturing sector in terms of percentage shares of the total labour force and total GDP. As a share of Argentinean GDP, the manufacturing sector increased from circa 15 per cent in 1913 to 34 per cent in 1970. For Australia, these figures were respectively 22 per cent in 1911 and 37 per cent at its peak in the early 1960s. The manufacturing sector also became the largest employer in both economies, rising from circa 10 per cent of the labour force during the first decade of the twentieth century to just over a quarter in the 1960s.

**TABLE 1** *Share of manufacturing in labour force and GDP, Argentina and Australia, 1895-1971 (% shares)*

	Shares of manufacturing in			
	Labour force		GDP	
	Argentina	Australia	Argentina	Australia
1895/01	9	7	na	na
1911/13	12	15	15	22
1921	na	19	na	23
1947	23	26	25	36
1960/1	26	27	31	37
1970/1	21	23	34	34

Sources: Argentina all data from *Relevamiento Estadística de la Economía Argentina 1900-1980, 4a parte*; Australian GDP figures from Mitchell 2007 and sectoral value added and persons engaged from various issues of the *Australian Yearbook*, 1907-1974.

19. A more practical consideration is the relative significance of the mining industry in Australia, which skews a productivity comparison aimed at exploring the differences in technological and organisational capabilities, because of the atypical nature of mining activities.

For the labour productivity estimates we divided manufacturing value added by the total number of persons engaged in manufacturing production, including working proprietors, managers, working family members and blue-collar workers. Value added is defined as the total value of output minus the value of intermediate goods, raw materials and other production costs such as the consumption of fuel and energy. Value added equals the returns to the input of labour (wages and salaries), capital (rents) and entrepreneurship (profits). Output includes repair and packaging costs, but excludes the costs of advertising, insurance, transport, and taxes. Output values were based on the selling price at the factory.<sup>20</sup>

To make the series comparable between both countries, we would prefer to compute a range of manufacturing unit value ratios to construct an industry PPP (purchasing power parity). However, the post-war price information that is available is biased by strong government price-setting schemes and phases of hyperinflation and is of little value to make solid matches. As a second-best alternative we express our series in 1939 US\$ using official exchange rates, which we checked for consistency with 1913 exchange rates (e.g. when both countries were still linked to the Gold Standard). We found negligible differences (circa 3 per cent). There are good reasons to believe that official exchange rates captured the relative prices in manufacturing in the pre-war period quite well, because in the period before the implementation of import substitution programmes, both countries depended strongly on the import of raw materials and intermediate goods.<sup>21</sup> We used wholesale price indices to convert the two countries' time-series into 1939 constant prices. For Argentina we used the wholesale price index from Mitchell. For Australia we connected the *Melbourne Wholesale Price Index (1907-1927/28)* to the *Wholesale Price (Basic Materials and Foodstuffs) Index series (1928/29-1967/68)* from the official yearbooks listed in the appendix.<sup>22</sup> Further data details are discussed in the source description in the appendix.

Figure 2 shows the manufacturing labour productivity estimates for Argentina and Australia in the period 1907-1973.<sup>23</sup> The figure shows that the productivity levels in manufacturing before WWI were roughly comparable, with slightly higher levels in Australia (circa 15 per cent). Australian productivity

20. Before 1946 output prices in Argentina were officially reported as factor costs, but in practice approximated selling prices (see appendix for details).

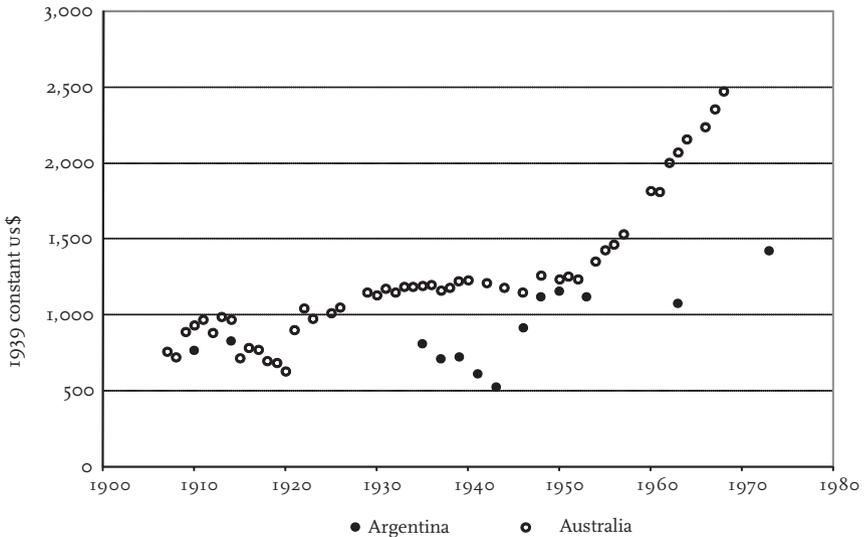
21. M.I. Barbero and F. Rocchi, 'Industry', in: G. della Paolera and A.M. Taylor (eds.) *A new economic history of Argentina* (Cambridge MA 2003) 268.

22. Argentina: B.R. Mitchell, *International historical statistics: the Americas, 1750-2005* (Basingstoke 2007) 745-746. Mitchell's index starts in 1913. We used *Oxlad's* wholesale price index to compute the 1910 figure. Australia: Commonwealth Bureau of Census and Statistics, *Official year book of the commonwealth of Australia* (Melbourne 1907-1976).

23. The Australian series ends in 1968 due to major changes in classification methods and statistical presentation afterwards.

levels declined during WWI, a trend which we also expect to have occurred in Argentina, because both countries were badly hit by the crises in international trade, falling exports and sharply increasing prices of capital goods imports, reducing output and value added.<sup>24</sup> In the late 1930s productivity levels in Australia were on average 94 per cent higher than in Argentina. This suggests that most of the divergence in the performance of the manufacturing sector took place between 1914 and 1935, and given the strong productivity rise in the 1920s in Australia, probably mainly during this decade.

**FIGURE 2** *Manufacturing labour productivity, Argentina and Australia, 1907-1973 (in constant 1939 US\$)*



Sources: See appendix. Notes: Years covered for Argentina 1910, 1913, 1934-35, 1937, 1939, 1941, 1943, 1946, 1948, 1950, 1953, 1963 and 1973.

Unfortunately, the lack of comparable data on aggregate industrial performance between 1914 and 1935 limits the possibility to identify the timing of the productivity divergence with greater precision. Evidence from trade statistics can help to bridge this gap to some extent, since the capacity to export manufacturing products is a fair measure of international competitiveness. Table 2 shows the percentage shares of manufacturing in total exports in both countries as well as the per capita value of manufacturing exports in current US dollars (again using official exchange rates). The third column shows the ratio of Argentina over Australia, to analyse comparative developments.

24. Taylor, 'External dependence, demographic burdens and Argentine economic decline after the belle époque'; Bulmer-Thomas, *The economic history of Latin America since independence*, 153-155.

**TABLE 2** *Share of manufacturing in total exports and in current per capita us\$, Argentina and Australia, 1919-1935 (% shares and country ratio)*

	% of manufacturing in total export		
	Argentina	Australia	Argentina/Australia
1919	1.6	9.0	0.18
1925	1.6	5.7	0.28
1929	1.3	7.8	0.17
1935	1.3	10.1	0.13
	Manufacturing export in current us\$ per capita		
1919	1.83	12.89	0.14
1925	1.26	7.94	0.16
1929	0.99	7.73	0.13
1935	0.48	5.99	0.08

Sources: Dirección General de Estadística de la Nación, *Anuario del comercio exterior de la república Argentina*, all issues between 1918-1935 (Buenos Aires); Commonwealth Bureau of Census and Statistics Melbourne. Official Statistics, Commonwealth of Australia, *Oversea trade. Australian statistics of oversea imports and exports and customs and excise revenue*, Bulletin No. 21, 25, 29 and 32 (Melbourne).

The export data yield two conclusions. First, immediately after WWI (in 1919) the share of manufacturing in total exports from Australia was five times as large as from Argentina, and the per capita value more than six times greater. No matter how large the error margins involved in using exchange rates as a measure of conversion, these differences are substantial. Second, the gap in international competitiveness seems to widen in the decade between 1925 and 1935 when Australia, as we will argue below, is reaping the fruits of the more solid industrial policy it had been pursuing since the first decade of the twentieth century.

An additional sign that Australian manufacturing was indeed in a more advanced state of development in the early twentieth century is the fact that it exported harvest machinery and chemical products (fertilisers) to Argentina, with a total value that exceeded 10 times the manufacturing export value from Argentina to Australia. Although the trade between both countries was largely dominated by agricultural products and tended to peak in times of harvest failures in either country, the skewed distribution of manufacturing commodity flows shows that Australia was more capable of accommodating domestic demands for agricultural capital goods and establishing backward linkages from its emerging industrial sector to its wealth-generating agrarian sector.

The lack of interest of consecutive Argentinean governments to support public institutions with the financial and organisational capacity to investigate and report on nationwide industrial activities is illustrative of the lack of an

encompassing industrial policy that goes beyond serving the interests of a few large-scale enterprises with firm political connections: while Argentina failed to produce aggregate accounts of industry for over twenty years, Australian statistical agencies provided systematic annual accounts of industrial output, employment and wages built up from separate sectoral and regional reports.

After a phase of relative stagnation during the 1930s and 1940s, Australian productivity levels started to rise again in the 1950s. This is in line with the effects we would expect from the Great Depression and the impact of WWII, which directed much of the available capital towards a few strategic sectors, while crowding out capital investments in many other sectors. That Australian labour productivity levels were not declining during these two decades signals a comparatively high degree of flexibility in the adjustment to changing global economic and military conditions.

The fluctuating pattern in Argentina recorded between 1936 and 1950 seem to signal adjustment problems related to the global economic downturn, but the rapid decline in productivity levels during the war is not as logical as it may appear. Contrary to WWI, when the entire export sector suffered a huge blow, exports in the years up to 1943 actually increased, while the share of manufacturing in total exports rose as well. Trade statistics show that the share of manufactures jumped from below 5 per cent in the mid-1930s to 19.4 per cent in 1943 (*Comercio Exterior 1955-57*).<sup>25</sup> This share fell back to 3.9 per cent in 1947, when the production of manufactures for non-military purposes in Europe resumed. On the basis of the trade data, one would expect a rise in labour productivity levels up to 1943 as a result of higher capacity utilisation.

Moreover, ISI policies only started to affect the composition of Argentinean imports in the early 1950s: the average annual volume of imported, manufactured consumption goods was 4,965,796 tons for 1946-1950, which decreased to 2,783,522 tons in the period 1951-1955.<sup>26</sup> That manufacturing imports did not decline instantaneously after the installation of the Perón regime in 1946 rules out the possibility that labour productivity rates were stimulated by ISI policies in the second half of the 1940s. Increased domestic demand for local manufactures cannot account for the sharp productivity growth between 1943 and 1946, and when it did in the early 1950s, it appeared to have little effect on productivity levels.

A decomposition of the changes in output components between 1910 and 1973 provides more insight into the underlying causes of the temporary pro-

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25. Dirección Nacional de Estadísticas y Censos, *Comercio exterior, 1955-1957* (Buenos Aires 1960) ix.

26. *Ibidem*, XIII-xv. In order to calculate the import value of manufactured consumption commodities, we subtracted primary products and capital goods from total imports. In 1939 constant prices, these imports averaged 944.9 million Argentine pesos in 1946-50 versus 581.4 million in 1951-55: a reduction of nearly 40 per cent.

ductivity boom. Table 3 shows the average annual growth rates of output, value added, intermediate goods and production costs. The table further reports the changes in the total sum of wages and salaries, the total persons engaged and the number of manufacturing establishments. It appears that the share of production costs and labour inputs in the period 1941-1943 increased much faster than value added, that the prices of capital and energy went up, and that nominal wages and salaries fell drastically. All these factors reduced value added and labour productivity.

**TABLE 3** *Average annual growth of output (O), value added (VA), intermediate goods (m), production costs (pc), salaries and wages (W), labour (L) and the number of establishments (Est) in Argentinean manufacturing, 1910-1973*

<i>Period</i>	<i>O</i>	<i>VA</i>	<i>m</i>	<i>pc</i>	<i>W</i>	<i>L</i>	<i>Est</i>
1910-1913	9.6	9.6	9.6	na	na	5.0	17.5
1913-1935	1.1	0.2	1.5	na	na	0.9	-1.1
1935-1937	8.1	3.0	11.2	3.2	4.6	8.7	8.5
1937-1939	2.4	4.9	1.1	7.1	4.8	3.8	4.2
1939-1941	0.5	-3.1	1.9	9.0	-4.8	5.7	3.4
1941-1943	3.0	4.2	1.8	17.8	1.8	12.9	7.0
1943-1946	15.9	41.7	4.5	0.9	14.2	10.5	14.0
1946-1948	6.7	9.5	4.5	-0.2	20.7	-1.2	-2.6
1948-1950	-0.5	2.1	-3.0	-5.3	-0.2	0.6	0.7
1950-1953	6.5	4.6	8.7	7.3	0.3	6.9	22.8
1953-1963	1.0	0.9	0.9	4.3	-2.2	-0.8	-0.4
1963-1973	7.0	4.7	8.6	4.3	-9.8	1.5	-1.1

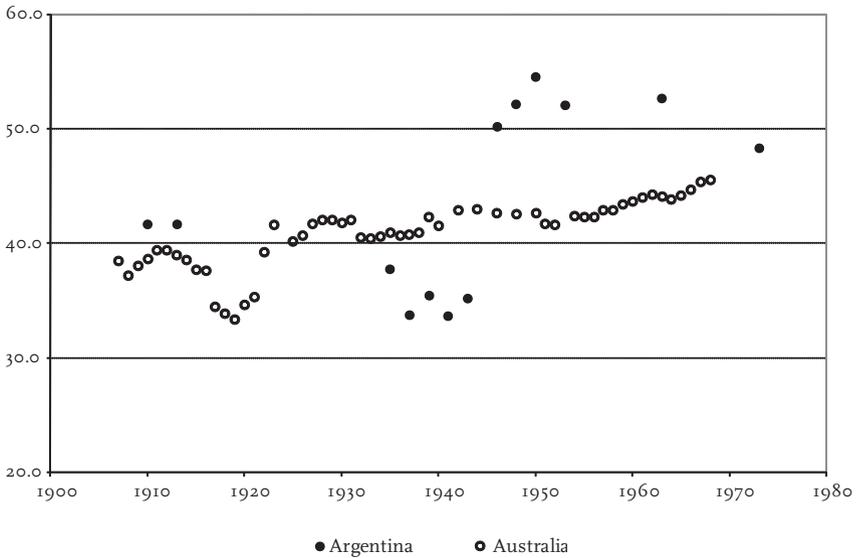
*Sources:* See appendix. *Notes:* Growth rates of *product costs* between 1953-63 and 1963-73 are based on the average of 1953-1973, as the 1963 survey does not report electricity consumption.

However, between 1943 and 1946 the reverse happened. Value added in total output increased dramatically, because labour input and labour remunerations increased by 10.5 and 14.2 per cent, respectively. During these three years, total labour inputs increased by 28.8 per cent, output by 47.6 per cent, and value added by a staggering 125 per cent. Hence, big changes in the relative cost of labour versus non-labour inputs caused the fluctuations in the labour productivity trend.

The strong shifts in the cost-structure of manufacturing production were induced by the new labour policies of the newly installed Perón regime. The sharp decline then rise in productivity levels between 1939 and 1950 were not matched by real changes in production efficiency, but by forced inter-

vention in the relative factor price structure. Besides, we cannot rule out the possibility that the Perón administration manipulated the data in ways that proved the success of their policies. The recent ‘Francis-Basualdo debate’ on the reliability of *información oficial* suggests potentially large margins of error in industrial statistics provided by government agencies during the Perón era.<sup>27</sup> It therefore seems wise to remain focused on the long-term trend of divergence.

**FIGURE 3** Value-added share in manufacturing output, Argentina, 1907-1973 (% share)



Sources: See appendix. Notes: Based on 1939 constant US\$. Sample years Argentina, see notes figure 2.

Figure 3 shows that the decline and sudden rise of the share of value added in total output contrasts with the rather smooth and slightly rising Australian long-term trend. The steady growth in labour productivity in Australia before 1930 and after 1950 was driven by a real increase in the efficiency of labour. The size of manufacturing establishments further increased in Australia, especially after 1950, which reflects the positive effects of capital deepening on efficiency gains through scale. In Argentina the rise in labour productivity levels in the mid-1940s corresponded with a declining number of workers per establishment, which continued during the early 1950s.

27. E. Basualdo, ‘Los primeros gobiernos Peronistas y la consolidación del país industrial: Éxitos y fracasos’, *Cuadernos del CENDES* 22 (2005) 113-151 and J. Francis, ‘Professor Basualdo’s Peronism’, *Revista de la historia de la industria Argentina y Latino Americana* 1 (2008) 1-13.

The dramatic rise in labour remunerations of industrial workers could not be sustained for long. Between 1963 and 1973 workers' wages (in 1939 constant US\$) decreased substantially, while the value-added share in total output decreased from a peak of 54.5 per cent in 1950 to 48.3 per cent in 1973. The wage policy of Perón was unsustainable because it put profit margins under pressure. Retail prices for domestically produced manufactures had been reduced to raise real wages, but manufacturing enterprises could only survive the combination of increasing wage bills and declining selling prices through major state subsidies on non-labour inputs, such as energy and raw materials.<sup>28</sup> These subsidies were part of Perón's encompassing stimulation programme for industrial expansion which reached a peak between 1948 and 1950, but rapidly dwindled afterwards under pressure of huge government deficits.

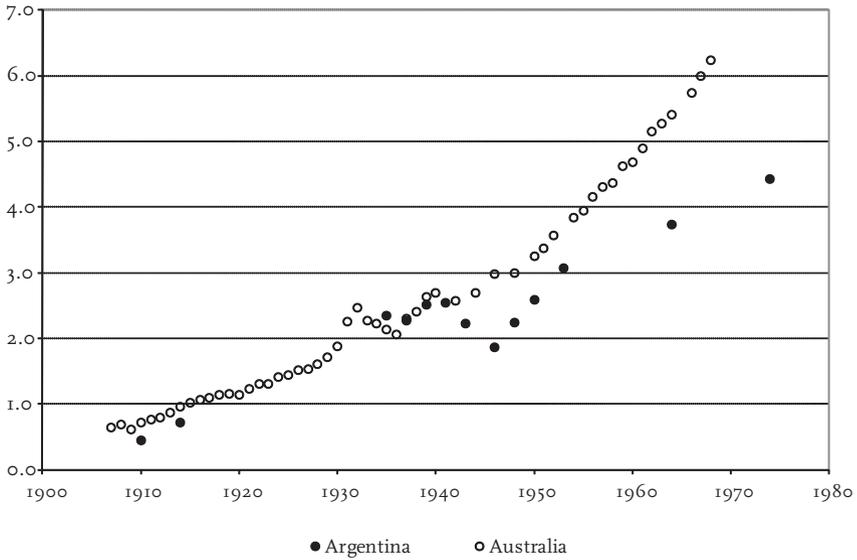
Developments in the capacity of installed machinery can give additional insight into the proximate determinants of the productivity divergence. Figure 4 presents the amount of horsepower installed per person engaged in manufacturing. It should be noted that the series for Argentina and Australia are not fully comparable. For Argentina the data report the total capacity installed and for Australia the data refer to the actual capacity in use, excluding idle or reserve capacity. We estimate that this may understate the Australian level by 10 to 30 per cent depending on the period of observation. This does not hamper an analysis of the long-run trend, however.

The amount of horsepower per worker clearly increased in Argentina and Australia during the period under consideration. The positive correlation between the expansion of installed capacity and labour productivity appears much stronger in Australia than in Argentina, however. In Australia, the increase in horsepower per worker prior to 1940 anticipated productivity growth. In Argentina, an equally large increase in horsepower per worker did not seem to have a similar effect on productivity levels.

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28. N. McPherson, *Machines and economic growth. The implications for growth theory of the history of the Industrial Revolution* (Westport 1994) 202-204; Rock, *Argentina 1516-1987*, 262-266; L.A. Romero, *A history of Argentina in the twentieth century* (Philadelphia 2002) 65-69. Apart from import tariffs, the Australian government has also offered direct subsidies since 1914. These subsidies were granted in a more selective way, however, and were largely directed towards agricultural enterprises (sugar, butter, fruit) suffering from severe international price fluctuations. See Meredith and Dyster, *Australia in the global economy*, 102. See for a global discussion of the link between long-term institutions, macro-economic policy and economic volatility, D. Acemoglu, S. Johnson, J. Robinson and Y. Thaicharoen, 'Institutional causes, macroeconomic symptoms: volatility, crises and growth', *Journal of Monetary Economics* 50 (2003) 49-123.

**FIGURE 4** *Installed capacity of machinery in manufacturing, Argentina and Australia, 1907-1974 (horsepower per worker)*



Sources: See appendix.

The per worker capacity levels declined sharply during the war years in Argentina. This reflects Argentina's dependence on imported machinery and transport equipment. Foreign demand for Argentine manufactures reached a peak in 1943, but the imports of fixed capital goods and other key inputs needed to spur manufacturing exports were seriously constrained by the war effort in Europe and the US.<sup>29</sup> After the war, the import substitution industrialisation programme resulted in a rapid increase in installed capacity, but this rise was again poorly translated into labour productivity growth. This finding has an important implication: the post-war stagnation in industrial labour productivity growth in Argentina is probably not so much the result of underinvestment in physical capital, as related to long-term underinvestment in technology-skill complementarities.

### Changing sector structures

Constructing a consistent comparable industry-level breakdown of productivity is always a daunting task, especially when sector structures tend to change

29. Import volumes of machinery and vehicles declined from 269,126 tons in 1938 to just 14,695 tons in 1945, to rise again to 611,760 tons in 1949, Dirección Nacional de Estadísticas y Censos, *Comercio Exterior 1955-1957*, XIII.

over time. In Argentina and Australia, the reported sector structure in the industrial surveys changes a couple of times as a result of changes in the composition of industries as well as the application of new classification methods. Table 4 presents a decomposition of manufacturing output in eight industries which we deem sufficiently consistent and comparable.

**TABLE 4** *An industry decomposition of manufacturing output, Argentina and Australia, 1907-1973 (% shares per sector)*

	<i>Argentina</i>		<i>Australia</i>	
	1913	1973	1907	1968
1 Metals. machinery & transport equipment	0.05	0.32	0.24	0.43
2 Textiles. clothing. leather & skins	0.11	0.13	0.23	0.09
3 Chemicals. dyes. pharmaceuticals & rubber	0.03	0.17	0.03	0.12
4 Food. drinks & tobacco	0.53	0.28	0.34	0.18
5 Woodworking. basketware & furniture	0.05	0.02	0.07	0.05
6 Stones. earthenware. glass & ceramics	0.12	0.03	0.02	0.05
7 Paper. stationery. printing & bookbinding	0.02	0.04	0.05	0.06
8 Miscellaneous manufactures	0.09	0.00	0.01	0.02
Total manufacturing	1.00	1.00	1.00	1.00

*Sources:* See appendix.

The table shows that the composition of manufacturing output in Argentina and Australia differed considerably prior to 1914. In Argentina the food, drink and tobacco sector accounted for more than half of total output. In Australia there were three dominant industries: foodstuffs, textiles, and metals and machinery. At the end of our period (around 1970), the sector structures had converged. The three biggest industries, i.e. foodstuffs, metals and machinery, and chemicals, were capturing around three-quarters of total manufacturing output in both countries. These patterns of specialisation are not surprising, since productivity levels in these three sectors are generally higher than in the other sectors. Labour productivity levels in the chemical industries, for instance, were 94 per cent above average in Australia in 1968 and 130 per cent above average in Argentina in 1973.

The lesson to be learned from analysing specialisation patterns is that Argentina's productivity levels did not fall behind Australia's because of shifts in the sector structure in the 'wrong direction', that is towards low-productive industries. On the contrary, productivity levels increased at a slower pace in Argentina in all eight types of industry. This is confirmed by table 5, which shows that the Argentine-Australia productivity ratios declined in all manufacturing industries between 1913 and 1963 and did not remain confined to a

few under-performing Argentinean or over-performing Australian industries.<sup>30</sup> The hampered transition towards a high-productive industrial economy in Argentina therefore cannot be attributed to industry-specific external conditions, such as growing global competition in specific labour-intensive manufactures. The underlying causes have to be sought at the sector-wide level. Disentangling the complex set of structural factors which have held back the potential efficiency gains from human and physical capital-deepening in the Argentinean industry in the long run will be the purpose of the next section.

**TABLE 5** *Comparative labour productivity in eight manufacturing sectors, 1913-1963 (Argentina/Australia)*

	1913	1935	1963	1963-1913
1 Metals. machinery & transport equipment	0.68	0.68	0.48	-0.20
2 Textiles. clothing. leather & skins	0.91	0.87	0.56	-0.35
3 Chemicals. dyes. pharmaceuticals & rubber	0.78	0.46	0.60	-0.18
4 Food. drinks & tobacco	0.71	0.52	0.48	-0.23
5 Woodworking. basketware & furniture	0.79	0.55	0.25	-0.54
6 Stones. earthenware. glass & ceramics	0.58	0.53	0.30	-0.28
7 Paper. stationery. printing & bookbinding	0.85	0.82	0.41	-0.44
8 Miscellaneous manufactures	1.27	0.46	0.43	-0.84
Total manufacturing	0.85	0.67	0.50	-0.35

Sources: See appendix.

### How and why did industrial policies in Argentina and Australia differ?

According to Taylor, the distinction between the ‘early’ and ‘late’ retardation perspective depends on whether one compares Argentina’s economic growth with the early industrialised economies of the us, Japan and Western Europe, or with the proto-type settler economies of Australia, Canada and New Zealand.<sup>31</sup> Our comparative analysis of industrial labour productivity in Argentina and Australia supports the ‘early retardation’ view, even in comparison with other settler economies.

The question we reserved for this final section is how to explain Argentina’s comparative industrial retardation. We will provide a tentative answer to this question. A comprehensive answer requires much more substantive micro-level research than we can offer here. What we aim at is to disentangle some of the key differences in industrial policy without putting relative weights on

30. 1963 is the last year for which we have data for both countries.

31. Taylor, ‘Three phases of Argentine economic growth’, 1-3.

various channels of causation. To develop our argument, we will first discuss the policy differences (the ‘how’ question) and then continue with the far more complicated task of explaining these differences (the ‘why’ question).

Let us start with the observation that the Argentina-Australia differences in economic policy prior to 1914 are not obvious to all contemporary observers. In both countries the rise in manufacturing output occurred in the context of increasing levels of industrial protection. In Argentina the politically influential *Unión Industrial Argentina* (UIA) lobbied for tariff policies targeting manufacturing imports, which meant that prior to 1914, most of the imported consumer commodities had an *ad valorem* duty of 25 per cent and for some selected items the duties even exceeded 50 per cent.<sup>32</sup> In Australia import tariffs had been placed on a wide range of manufacturing products (circa three-quarters of total commodities) since the late nineteenth century, and they were raised substantially by the Greene Tariff law passed in 1921. These tariffs effectively protected enterprises in steel, electrical appliances and chemicals against British and US competition.<sup>33</sup>

Gallo thus relates the break in GDP per capita trends in the 1940s to the detrimental economic policies of the Perón government in the same decade, claiming that “Australia and Argentina had a very similar economic and institutional structure at the end of the nineteenth century”.<sup>34</sup> Yet, despite the apparent similarities in industrial protection, we argue differently, namely that the causes of the economic divergence can indeed be traced back to the late nineteenth century, but that the effects only surfaced when the defining agrarian features of the Argentinean settler economy (offering such striking resemblances with Australia) rapidly lost their relevance with the collapse of international export markets in the early 1930s.

More specifically, we argue that the key difference in policy orientation relates to the preparedness of Australian governments to re-allocate public resources towards the support of a broad-based industrial sector, whereas consecutive Argentinean governments set out to serve particularist interests, raising entry barriers to outsiders and reducing domestic competition in markets for manufacturing commodities.

Pineda has made a compelling case for the argument that protectionism in Argentina allowed the largest stock-holding companies to form oligopolies and pursue rent-seeking strategies at the expense of efficiency gains.<sup>35</sup> Oli-

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32. Y. Pineda, ‘Analysis of manufacturing strategies and profits: Industrial development in Argentina, 1904-1930’, *Business and economic history on-line* 1 (2003) 13.

33. D. Meredith and B. Dyster, *Australia in the global economy. Continuity and change* (New York 1999) 102-105.

34. Gallo, ‘Argentina-Australia’, 2.

35. See for a list of these firms and their profit-margins Pineda, ‘Analysis of manufacturing strategies and profits’, 9-11.

gopolies were good for the profit margins and capital access possibilities of these firms (as Pineda showed), but the much needed improvement of capital market access to grassroot firms was not accommodated. The lack of favourable conditions to support the growth of smaller local manufacturing firms in Argentina was reflected in a number of other conditions as well.

First, in 1895 more than three-quarters of the manufacturing firms were owned and managed by foreign immigrants, who basically ‘imported’ the necessary skills, contacts and financial means to set up an establishment in the larger urban areas.<sup>36</sup> The foreign-owned manufacturing sector was dominated by small workplaces and craft production, in which both employers and employees lacked negotiation strength to influence political decisions.<sup>37</sup> This stood in sharp contrast with ownership structure and average size of manufacturing enterprises in Australia. These firms were largely owned and managed by Australians, and around 1913 Australian manufacturing enterprises were employing roughly twice as many workers per establishment: 11.8 versus 21.7 (see appendix for sources).

Second, the different policy efforts were reflected in the early development of technical and vocational education in Australia. From the 1880s onwards the establishment of mechanics institutes and the legal formalisation of occupation-based skills and apprenticeships channelled the exposure to and adoption of modern technological and scientific developments.<sup>38</sup> Consequently, in 1913 there were more than 40,000 children attending vocational education, which constituted no less than 6.7 per cent of total school enrolment. Industrial jobs were protected by import duties if employers could prove they ensured ‘fair and reasonable’ wages and working conditions.<sup>39</sup>

The explicit connection made in government policies between the social ascendance of industrial labour, the economic value of industrial activity and the development of working skills and shop floor knowledge was one of the defining features of what Butlin called ‘colonial socialism’.<sup>40</sup> After the intro-

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36. As children of immigrants born in Argentina automatically are given Argentine nationality, foreign ownership was actually a temporary phenomenon. It just points to the lack of local support for manufacturing development. The figure is taken from the 1895 census (see appendix).

37. C.M. Lewis, ‘Industry in Latin America before 1930’ in: L. Bethell (ed.), *The Cambridge history of Latin America, c. 1870 to 1930* (Cambridge MA 1986) 267-323; M.M. Hall and H.A.J. Spalding, ‘Urban labour movements’ in: L. Bethell (ed.), *The Cambridge history of Latin America, c. 1870 to 1930* (Cambridge MA 1986) 183-224.

38. R. Pickersgill, *Dimensions of innovation: some historical perspectives on vocational education and training and innovation in Australia*. National Centre for Vocational Education Research (NCVER) (Adelaide 2005) 6-7.

39. Macintyre, *A concise history of Australia*, 150-151.

40. N.G. Butlin, ‘Colonial socialism in Australia, 1860-1900’ in: H.G.J. Aitken (ed.), *The state and economic growth: Papers of a social science research council* (New York 1959) 22-78.



Ill. 1 Photograph of the docks in the Puerto Madero, Buenos Aires ca. 1900. the port facilities which were crucial to the strong agrarian-export sector of Argentina in this era were mainly financed by British investors. Original source unknown, picture taken from <http://en.wikipedia.org/wiki/Argentina> (29-06-2011).

duction of the federation in 1901, a federal Industrial Arbitration Court was founded, which manufacturing workers could appeal to, in order to secure their labour rights. These courts were part of social reforms designed to improve the position of the working class. Hence, blue-collar workers were recognised as an integral part of Australian society from very early on. This stands in sharp contrast to the low social status of blue-collar workers in Argentina and the political suppression of labour movements.<sup>41</sup>

Regarding public investments in vocational training, nothing similar evolved in Argentina before 1914. Apart from a small number of children aged 6 to 14 receiving education on the factory floor, the 1913 education census contains no report on vocational education whatsoever.<sup>42</sup> In 1895 the illiteracy rate of the working age population was 53.3 per cent in Argentina versus

41. J. Rickard, *Australia: A cultural history. The present and the past* (New York 1996) 90-91; F.G. Clarke, *The History of Australia* (Westport 2002) 86-89, 98-99; H.A.J. Spalding, *Organized labor in Latin America Historical case studies of urban workers in dependent societies* (New York 1977); J. Horowitz, *Argentine unions, the state and the rise of Perón, 1930-1945*. Institute of International Studies (Berkeley 1990) 2; E. Frankema, *Has Latin America always been unequal? A comparative study of asset and income inequality in the long twentieth century* (Leiden 2009) 138-140.

42. Comisión Nacional, *Tercer Censo Nacional. Tomo ix. Censo de la Población Escolar* (Buenos Aires 1917) 81-99.

circa 22 per cent in Australia.<sup>43</sup> And educational developments continued at a much slower pace in Argentina: circa 50 per cent of the population did not finish their primary education, and only 22 per cent finished their secondary education as late as the 1960s.<sup>44</sup> These bare figures indicate that the development of industry-specific human capital was taken seriously in Australia already in the late nineteenth century, while Argentina still had to work on the foundation of its primary education system before it could think of industry-specific vocational education schemes.<sup>45</sup>

Third, policy differences were reflected in the choices concerning fiscal reform. Following the successful tax reforms of various other Western countries, Australia introduced a progressive income tax in 1915. In Argentina income taxes were only imposed under dictatorial rule in 1932 under pressure of collapsing custom revenues.<sup>46</sup> However, lacking real political support and popular consent, the income tax suffered from massive tax evasion and declined to less than 10 per cent of total revenue in the 1970s.<sup>47</sup> The political conflicts about the introduction of land taxes were even sharper. The small elite of large estate owners was powerful enough to resist the attempt to introduce a land tax as late as 1986, when a draft legislation for tax reform was blocked by the farm lobby in the midst of the economic depression.<sup>48</sup> Contrary to Argentina, the political dominance of the big landowners in Australia was broken by the end of the nineteenth century.<sup>49</sup> The Australian government successfully introduced a land tax in 1910 to force big British landowners to sell their land in smaller pieces to Australian settlers.

In other words, the 'public interest' was a less familiar concept in Argentinean politics than in Australian politics. In Argentina there existed no consensus on the use of fiscal instruments to redistribute private wealth towards

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43. Argentina: Z. de Lattes and A.E. Lattes, *La población de Argentina en el largo plazo. Serie investigaciones demográficas*. Instituto Nacional de Estadística y Censos (INDEC) (Buenos Aires 1973) 79. Australia: C.H. Wickens and J. Stonham, *Official yearbook of the Commonwealth of Australia*, no. 17, 1924 (Melbourne 1924) 476.

44. On education in Latin-America see E. Frankema, 'Comparing the distribution of education across the developing world, 1960-2005: What does the grade enrollment distribution tell about Latin America?', *Social Indicators Research* 88 (2008) 437-455; E. Frankema, 'The expansion of mass education in twentieth century Latin America: A global comparative perspective', *Revista de Historia Económica* 27 (2009) 359-395. Education in Argentina *an sich*: Rock, *Argentina 1516-1987*, 320.

45. W. Baer and M.E.A. Herve, 'Employment and industrialisation in developing countries.' *The Quarterly Journal of Economics* 80 (1966) 88-107.

46. A. Mitchell, *Institutions and factor endowments: Income taxation in Argentina and Australia*. xivth International Economic History Congress, Helsinki (2006).

47. *Ibidem*, 30.

48. The Worldbank, *The lessons of tax reform* (Washington D.C. 1991) 54.

49. Armstrong, 'The social origins of industrial growth: Canada, Argentina and Australia, 1870-1930', 90-92.

public goods and services in order to promote the 'national economic interest'. The Argentinean state tended to serve particularistic interests. The lack of solidarity between social classes was exacerbated by repeated conflicts over the primacy of the state as a (tax) revenue managing institution. Australian politicians set out to reorganise state finances on the basis of consensual reform.

Argentina could afford to neglect the development of a competitive industrial sector as long as the country maintained its comparative advantage in exporting agrarian commodities to the industrialised countries. Foreign investors focused almost exclusively on the agrarian-capitalist complex, while the landowning class, which dominated politics until the rise of Perón in the 1940s, had few incentives to spur economic reforms beyond the creation of relatively secure investment outlets in oligopolistic industrial markets. The vulnerability of this development strategy was painfully demonstrated by the dramatic collapse of Atlantic trade during WWI, but confidence was quickly restored when trade resumed and US markets replaced part of the traditional European demand for Argentinean commodities like wheat, maize, linseed, cotton, beef and wool.

Despite the worsening terms of trade during the 1920s, Argentina managed to increase its foreign market share in most of these commodities, so that the total value of per capita exports approximated the extremely high levels of the immediate pre-war years.<sup>50</sup> The belief in the durability of the agrarian export-led growth model and related liberal market policies was widely shared across Latin America up until 1929. As Bulmer-Thomas puts it, 'The strategy of increasing market share in Latin America [...] was widespread, popular, and profitable [...] many countries enjoyed the illusion in the 1920s that the WWI was simply a temporary setback in the long march of export-led growth'.<sup>51</sup>

Australian political elites had reached a different stance on the desirability of industrial development. The establishment of an independent federation in 1901 formed the end stage of a process of decades of increasing physical and emotional integration between the six British self-governing dominions, spurred by enhanced infrastructural connections (telegraph, railways) and a growing sense of nationalism. The most important hurdle for the establishment of the Australian commonwealth was the creation of a fiscal union, which enforced the transfer of the independent state's power to impose tariffs and raise custom duties towards the new federal government. The final agreement on the establishment of a common market with external import tariffs generated the economies of scale and scope that enhanced the potential profit margins for the emerging manufacturing businesses in Victoria and New South Wales.

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50. Bulmer-Thomas, *The economic history of Latin America*, 161-170.

51. *Ibidem*, 166-167.



Ill. 2 Photograph of the procession in support of the eight hour working day, Melbourne, 4th October 1909. The Labour Party in Australia set an example to the rest of the world, being the first to form a government in 1899. Original source unknown, picture taken from [http://en.wikipedia.org/wiki/History\\_of\\_Australia](http://en.wikipedia.org/wiki/History_of_Australia) (29-06-2011).

According to Armstrong the shift in national economic policy orientation can be traced back to Australia's specific social structure.<sup>52</sup> Egalitarianism was embedded in the roots of a typical convict society, where early settler communities shared very similar social backgrounds and a strong sense of communal identity. This was reflected, amongst others, in the strength of organised labour prior to 1914. At a time when European governments were still trying to contain the increasing influence of labour unions and the threat of 'socialism', the Australian Labour party had already won its first national electoral majority.<sup>53</sup> Indeed, it is interesting to note that in the design of the Australian

52. W. Armstrong, 'The social origins of industrial growth: Canada, Argentina and Australia, 1870-1930', in: D.C.M. Platt and G. di Tella (eds.) *Argentina, Australia & Canada* (London 1985) 207-230.

53. Macintyre, *A concise history of Australia*, 127.

industrial policy, balancing the interests of the different federal states was given priority and superseded potential conflicts between social classes.

But there are other specific historical factors which may have contributed to the depth of the long-term productivity divergence. In contrast to Argentina, WWI was a major catalyst of national industrialisation efforts in Australia. European, and particularly German, industrial products became almost inaccessible. In response to the sudden scarcity of consumption goods and intermediate goods, Australian political elites started to adapt their minds towards the necessity of state-led industrialisation for military strategic purposes. In 1915 the first big steel plants were opened in Newcastle (New South Wales), initiating the rapid development of heavy industry in war-time Australia.<sup>54</sup> Theories of industrial development on the basis of infant-industry arguments had become part and parcel of the intellectual economic orthodoxy by the 1920s.<sup>55</sup>

This is not to say that the institutions that had emerged from country-specific historical experiences (immigration patterns, wars) offer an encompassing explanation for differences in industrial development. Australian industrialisation also benefited from certain geographical advantages as it had direct access to large mineral deposits, such as iron ore, which were crucial for its incipient metal industry (see table 3). In Argentina manufacturing activities remained based much longer on the production of light consumer commodities with relatively short chains of production, rather than the heavy industry of Australia.<sup>56</sup> But it would be going too far to argue that Australia's geographical fortunes were decisive in sustaining the industrial productivity divergence. Considering the abundant availability of industrial inputs like cotton, wool, hides, straw, meat and milk for the textile, leather, cardboard and food industries, respectively, the competitive advantages in terms of raw material supply were certainly not exclusively biased against Argentinean entrepreneurs.

Indeed, the crucial difference resided in the attitude of both governments with respect to public investments in the physical and human capital infrastructure and the institutions that they created to help incipient industrial firms to achieve scale, technological sophistication and competitive productivity rates. Nineteenth-century asset inequality based on the unequal ownership of Australia's vast mineral and land resources were dissolved by the weak historical embedding of class distinctions in the Australian settler society. It made 'class' a concept of little use for socio-economic policies. In Argentina, on the other hand, class distinctions were deemed fundamental for the maintenance of its economic prosperity.

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54. S. Macintyre, *A concise history of Australia* (Cambridge MA 2004) 163.

55. Meredith and Dyster, *Australia in the global economy*, 168.

56. Barbero and Rocchi, 'Industry', 273. Although Perón's ambitions regarding industrial reform were much higher than those of his predecessors, his policies also emphasised the lighter manufacturing industries.

## Conclusion

The reversal of fortune in twentieth-century Argentina is often interpreted as the consequence of a failed transition from a successful agrarian export economy towards a high-productive industrial economy. A comparative analysis of industrial labour productivity has offered some fresh insights into the nature and timing of this transition. It demonstrates that Argentina's industrial development already lagged behind Australia's before WWI, that the divergence continued almost unabated until 1973, and that the strong convergence during the 1940s was caused by an unsustainable government intervention in industrial wage-setting programmes, without any lasting productivity-enhancing effects. The productivity gap of circa 15 per cent around 1910-1914 had increased to around 100 per cent in the early 1960s.

In comparison to Australia, Argentina's manufacturing sector was less diversified around 1914, and the Argentinean government undertook very little initiative to enhance the supply of industrial labour skills and capital market access for small and medium-scale enterprises up to the 1940s. The failure of various Argentinean governments to broaden political and popular support for a more solid and encompassing fiscal system indicates that the Argentinean state was never in a similar position to the Australian state to initiate and support state-led industrialisation as an alternative to the vulnerability of the agrarian export sector to world market shocks.

The differences in political culture and policy orientation were observable in the late nineteenth century, but it took a long time before these differences really paid out in terms of resilience to economic shocks. Our comparison with Australia has taken the explanation for Argentina's reversal of fortune back to the period where the growing influence of the Australian working class on the political decision-making process contrasted with the virtually unquestioned lobbying power of the landowning elites in Argentina. This was well reflected in the differing intensity with which both governments carried out their public education policies, and in particular with regard to investments in vocational education. When the protagonists of rural interests were eventually challenged by the Perónistas in the 1940s, the radical economic reforms ignored the structural weaknesses of the manufacturing sector: productivity levels and industrial labour skills were too weakly developed to justify vast increases in labour remunerations.

Although the firm-level analysis by Pineda corroborates our argument concerning the comparative inefficiency of Argentinean manufacturing from a micro-perspective, there remain big challenges for future research on both the macro and micro levels.<sup>57</sup> First, the data gap in Argentina for the era

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57. Pineda, 'Analysis of manufacturing strategies and profits', 29-30.

1914-1935 needs to be addressed by unearthing more disaggregated sources of industrial development. Second, the comparative study of industrial productivity should be extended to other settler economies such as Canada, New Zealand, South Africa or Uruguay. Third, more detailed research should be devoted to exploring the deeper mechanisms underlying the political economy in both countries. Finally, we need more quantitative and qualitative accounts concerning the comparative skill levels in each branch of industrial activity to study the link between human capital accumulation and structural economic transformation in a more systematic way than we have done here.

## APPENDIX

Here we present the primary sources used to compute industrial labour productivity rates and additional manufacturing sector characteristics in Argentina and Australia. This list is followed by a summary description of the data retrieved from these sources.

### *Argentina*

**Labour force and value added data for 1895:** Comisión Directiva (ed). *Segundo censo de la República Argentina. Tomo III Censos Complementarios* (Buenos Aires 1898). Part of the second national census of Argentina conducted in 1895. Manufacturing figures reported in the complementary third volume.

**For 1910:** Ministerio de Agricultura, Dirección de comercio é industria, 'Censo Industrial de la República Boletín no 13. Resumen General' (Buenos Aires 1910). This report has been published as part of the *Censo Industrial y Comercial de la República Argentina 1908-1914* (Buenos Aires 1915), which contains an industrial census for the year 1910. The thirteenth bulletin of a larger series of bulletins (1908-1914) discussing the economic state of the country, regions and provinces, as well as particular economic sectors.

**For 1913:** Comisión Nacional (ed). *Tercer Censo Nacional. Tomo VII Censo de las Industrias* (Buenos Aires 1917). The third national census of Argentina conducted in 1913. The seventh volume presents industrial figures. Discussion of the methods and data of the 1913 industrial census can be found in Martínez, A.B., Latzina, F., and Lahitte, E. (1917) *Tercer Censo Nacional. Tomo vii: Censo de las Industrias*. Buenos Aires, Talleres Gráficos de L.J. Rosso y Cía.

**For 1935, 1937, 1939, 1941, 1943, and 1946:** Dirección Nacional de servicios técnicos del estado. Dirección general del servicio estadístico nacional (ed). *IV Censo General de la Nación. Tomo III Censo Industrial 1947* (Buenos Aires 1948). The fourth national census of 1947. The third volume presents data on industry for the years 1935, 1937, 1939, 1941, 1943 and 1946.

**For 1948 and 1950:** Ministerio de Hacienda de la Nación. Dirección Nacional de Estadística y Censos (ed). *Censo Industrial 1950* (Buenos Aires 1957). The industrial census of 1950 presents industrial figures for the years 1948 and 1950.

**For 1953:** Dirección Nacional de Estadística y Censos, *Censo Industrial 1954* (Buenos Aires 1960). The industrial census of 1954 which presents industrial figures for 1953.

**For 1960:** *Censo Nacional de Población 1960. Tomo I Total del País* (Buenos Aires 1961) The first volume of the 1960 population census presents national figures on industry. Other volumes contain sub-national data.

**For 1963:** Secretaría del Consejo Nacional de Desarrollo. Instituto Nacional de Estadística y Censos (ed.). *Censo Nacional Económico 1963. Resultado Generales*. (Buenos Aires 1964). The national economic census of 1963 presents industrial figures for the combined years 1963 and

1964. **For 1973:** Republica Argentina. Ministerio de Economia. Instituto Nacional de Esatdística y Censos (*ed.*). *Censo Nacional Economico 1974. Total del Pais. Industria Resultados Definitivos*. (Buenos Aires 1974) The national economic census of 1974 presents industrial figures for the combined years 1973 and 1974.

**Wholesale price index (1913-1973) and exchange rates 1913, 1939:** Mitchell, B.R., 2007, *International Historical Statistics. The Americas 1750-2005*, Sixth edition, Table H1, pp. 745-746. Exchange rates from <http://www.measuringworth.org/exchange/global/> (accessed on 12-08-2010).

**Trade data for 1918-1935:** Dirección General de Estadística de la Nación, *Anuario del comercio exterior de la república Argentina*, all issues between 1918-1935 (Buenos Aires). **For 1935-1955:** Bravo, G.C. and Compiano, E.N., 1960, *Comercio exterior 1955-1957*. Poder Ejecutivo Nacional Secretaria de Estado de Hacienda. Dirección Nacional de Estadística y Censos, Buenos Aires.

### **Australia**

**Labour force and value-added data for 1901-1975:** Commonwealth Bureau of Census and Statistics, *Official Year Book of the Commonwealth of Australia* (Melbourne 1907-1976) No. 1-61. These yearbooks contain information on population, employment, manufacturing output and value added, usually on a disaggregated level. For a few years during the wars, no official yearbooks were published.

**Wholesale price index (1913-1973) and exchange rates 1913, 1939:** *Melbourne Wholesale Price Index (1907-1927/28)* connected to the *Wholesale Price (Basic Materials and Foodstuffs) Index series (1928/29-1967/68)* as reported in the *Official Year Book of the Commonwealth of Australia* (Melbourne 1907-1976); Exchange rates from <http://www.measuringworth.org/exchange/global/> (accessed on 12-08-2010).

**Trade data for 1919-1935:** Commonwealth Bureau of Census and Statistics Melbourne. Official Statistics, Commonwealth of Australia, *Oversea trade. Australian statistics of oversea imports and exports and customs and excise revenue*, Bulletin No. 21, 25, 29 and 32 (Melbourne).

### **Source description**

#### *Labour force*

In all censuses and surveys the manufacturing labour force in Argentina and Australia is defined as the total number of persons engaged in manufacturing including employees, working managers, self-employed and employers. In the 1963/64 census of Argentina, so-called 'outworkers', e.g. people employed by a manufacturing firm but working at home, were excluded. This group constitutes just a fraction of the total labour force, for which we corrected. We had insufficient information on working hours for Argentinean manufacturing, however, to refine our estimates to comparative productivity per hour of labour.

#### *Value added*

Until 1939 manufacturing value added in Argentina was based on factor costs rather than factory gate selling prices, as is the standard in the Australian censuses. In practice, however, the differences were negligible. The fourth national census of Argentina states that factor cost values in practice approximated selling prices rather than factor costs proper. "En el cuestionario solicitó se el costo producción de los artículos elaborados en el ejercicio, aun cuando no todo hubiera sido vendido en el mismo. Si bien se estima que en muchos casos los industriales se ciñeron al dato pedido, referente al costo de su producción, se ha observado en otros que el valor asignado ha de estar más cerca del de venta, pese a las aclaraciones posteriores y a las afirmaciones de que se trata del primero" (Censo Industrial 1947: 5).<sup>58</sup>

The Argentine and Australian manufacturing censuses include bakeries, but in the 1913 census of Argentina the commercial activities were not separated from the manufacturing activities, so they remained included. It is unclear whether this biased our results. Given the results for 1910, where commercial activities were excluded, there is little reason to believe that it biased the results significantly.

In the 1910 and 1913 data for Argentina 'production costs', e.g. the costs of power, fuel, light and lubricants, were not reported. For Australia we lack this information for the years between 1907 and 1923. We corrected for this by subtracting the average share of production costs in total output of the five closest subsequent years from value added: for Argentina 2.5 per cent, for Australia 3.5 per cent. In the Argentinean census of 1963, purchased electricity was not part of production costs, for which we also corrected.

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58. Dirección Nacional de servicios técnicos del estado. Dirección general del servicio estadístico nacional (ed.) *IV Censo general de la Nación. Tomo 111 Censo industrial 1947* (Buenos Aires 1948).

In Argentina the surveys of 1910-1913 and 1937-1950 refer to calendar years; 1935 refers to 1934-35 (1 Jul 1934 – 30 Jun 1935); in the years 1953, 1963, and 1973 value-added estimates correspond to calendar years, but persons engaged to accounting years ending on 30 July 1954, 30 April 1964, and 30 September 1974, respectively. In Australia the surveys of 1907-1918 follow calendar years; from 1918-1919 onwards they correspond to accounting years (1 Jul – 30 June). This system was not implemented simultaneously in all the states. New South Wales (NSW) 1914 and 1915 ended on 30 June 1915 (1 July 1914-30 June 1915), and 1916 ended on 30 June of that year. For 1917, NSW, Victoria, and South Australia ended on 30 June 1917. West Australia in 1925-26 referred to 18 months (1 Jan 1925-30 June 1926), which we adjusted for by subtracting 50 per cent from total value added.

### *Price indices*

Considering the high post-1945 Argentine inflation rates, averages of index numbers were chosen for the year under consideration and the year thereafter, based on the premise that index numbers revert to the 1st of January of a year, whilst aggregated census values are collected throughout the year. No corrections were needed for the wholesale price index of Australia. Exchange rates to the US dollar in 1939 were \$1.00 = m\$3.2414 for Argentina, and \$1.00 = £<sub>aus</sub>0.2830 for Australia; m\$n = *peso moneda nacional*. £<sub>aus</sub> = the Australian pound.

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