CHAPTER 4

Foreign Trade and Economic Growth in the Nordic Countries, Australasia and the Rio De La Plata Region, 1870–1970

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1 Introduction

In 1870 Australia was the richest country in the world as measured by GDP per capita, and its Australasian neighbour New Zealand was not far behind.[1] By the same measure Argentina and Uruguay were about level with Germany and France in the 1890s, clearly richer than the Nordic

[1] https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-project-database-2020?lang=en.

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countries (Denmark, Sweden Norway and Finland). By 1970 a complete reversal of fortunes had taken place. The Nordic countries had already overtaken Argentina and Uruguay by the inter-war period. And in the 1960s Sweden and Denmark also outstripped the GDP per capita of the Australasian countries.

Why did the Nordic countries grow so much faster than Australia and New Zealand and why did the Rio de la Plata region fall behind so dramatically? A full answer to such a complex question cannot, of course, be given in a short chapter. What we will do here is explore one important aspect, namely the relationship between foreign trade and economic growth. Though dramatically different in many other respects these countries shared one important commonality in the late nineteenth century. In all of them foreign trade played a large role in comparison with the industrial core in North America and Western Europe. They were all initially also dependent on a few staple goods for their export earnings.

Different types of goods differed in price volatility and in long-run growth prospects, since the income elasticity of demand for them differed. Consequently, the evolution of export earnings was also dependent on the extent to which the countries were able to change the composition of their exports to goods with higher income elasticity of demand. In this regard the countries in the sample differed enormously, which had consequences for their growth paths.

When exploring the relationship between foreign trade and economic growth we have found Thirlwall's Law (Thirlwall, 2011a) to be a useful framework. It argues that the long-term growth rate of a country is constrained by the balance of payments. It has mostly been applied to the period after World War II, where it has a good track record in predicting growth rates. In this paper, we will explore to what extent it can shed light on the varying growth experiences in the Nordic countries, Australasia and the Rio de la Plata region over the hundred-year period 1870–1970, or more precisely over the periods 1870–1913 and 1950–1970. Before we do that, we will first present some basic data on GDP growth and exports for these economies in this period.

2 Economic Growth 1870–1970 in the Three Regions

Compound interest is a powerful mechanism. The annual average growth rate in GDP per capita of the Nordic countries between 1870 and 1970 was 2.0%, while it was 1.0% in the Australasian countries (Table 1, Fig. 1). This difference in growth rates made it possible for the Nordic countries to close the gap with the Australasian GDP per capita level in the 1960s (and in the case of Sweden and Denmark even surpass it), even though their GDP per capita level in 1870 was less than half that of Australasia. The long-run growth rate in GDP per capita of the Rio de la Plata countries was slightly higher than Australasia's, but since they started from a level not much above the Nordic countries in 1870, they had fallen hopelessly behind by the post-war period.

Another clear difference between the three regions portrayed in Fig. 1 is the high volatility in growth rates in Australasia and the Rio de la Plata countries compared with the Nordic countries. The three Scandinavian

Table 1 Annual growth rates in GDP and GDP per capita (percentage growth rate of exponential trend)

	GDP			*GDP per capita*		
	1870–1930	*1930–1970*	*1870–1970*	*1870–1930*	*1930–1970*	*1870–1970*
Australasia	**2.9**	**3.9**	**2.9**	**0.6**	**2.1**	**1.0**
Australia	2.8	3.9	2.9	0.6	2.1	1.0
New Zealand	3.2	4.0	3.1	0.8	2.3	1.1
Rio de la Plata	**4.7**	**3.3**	**3.8**	**1.5**	**1.5**	**1.2**
Argentina	5.0	3.3	4.0	1.7	1.5	1.3
Uruguay	3.0	2.8	2.9	0.4	1.6	1.1
Nordic countries	**2.5**	**3.6**	**2.8**	**1.6**	**2.8**	**2.0**
Denmark	2.7	3.2	2.7	1.6	2.3	1.7
Sweden	2.5	3.6	2.8	1.8	2.9	2.2
Norway	2.3	3.7	2.7	1.5	2.8	1.9
Finland	2.4	3.9	2.9	1.3	3.1	2.0

Sources Core countries, Nordic countries, Latin American Southern Settler Societies, and Australasia, Maddison Project Database (2020) and Bolt and Van Zanden (2020). Uruguay, Bértola (2016), Argentina, Bértola and Ocampo (2012), Sweden, Schön and Krantz (2015) and Norway (Grytten, 2015)

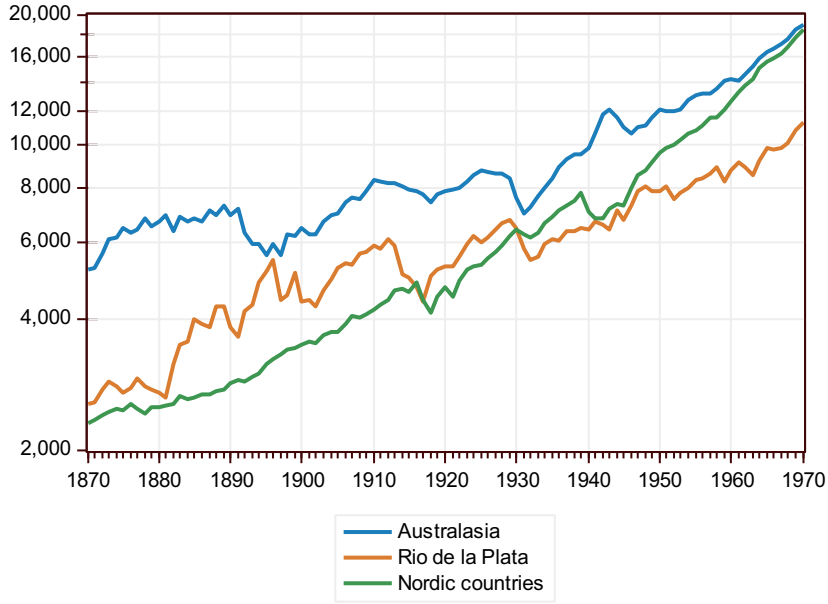

Fig. 1 GDP per capita level in Australasia, the Nordic countries and the Rio de la Plata region 1870–1970 (PPP adjusted 2011 US dollar) (*Source* Based on sources of Table 1)

countries and Finland experienced dents in their growth curves during the two World Wars and to a certain extent during the crises of the early 1920s and 1930s, but otherwise economic growth in the Nordic region was a fairly linear process which accelerated in the 1950–1970 period. In the other two regions growth fluctuated wildly during the first globalization period.

2.1 1870–1930

The purchasing-power-adjusted GDP per capita growth rates did not differ much between the Rio de la Plata region and the Nordic region in the 1870–1930 period, according to the figures presented in Table 1, even though fluctuations in growth rates were much more dramatic in the Rio de la Plata region. After a hectic rise in growth rates in the 1880s a dramatic decline occurred in the early 1890s as the Baring crisis broke out

in Argentina, when British investors became increasingly nervous about the Argentinians' ability to service the large debts they had amassed in the previous decades. The flow of foreign capital dried up at the same time as prices for Argentine exports fell. Argentina managed to bounce back from the financial crisis, however. Its debts to British investors were rescheduled, the rates of interest on debts were lowered at the same time as the periods of repayment for the loans were prolonged. Moreover, Argentina effectually devalued its currency by instituting a dual currency system with a gold and a paper peso. The exchange rate for the gold peso was maintained but the paper peso depreciated. This caused import prices to rise for domestic consumers, stimulating production for the home market. At the same time, exports continued to grow at the same pace as in the previous two decades for another twenty years (McLean, 2013: 129–131). Consequently, the Argentine economy resumed its strong growth until World War I. During World War I, the growth rate of the Argentinian economy slowed down even more dramatically. Growth resumed after World War 1, but the Rio de la Plata region was again severely hit by the economic depression in 1929–1932. This proved to be a major turning point for the economic development of Argentina as well as for its neighbouring country, Uruguay. By the 1920s it had already become increasingly obvious that there was an oversupply of agricultural commodities in the international markets (McLean, 2013; Thorp, 1986), which was underlined even more by the depression in the early 1930s followed by the collapse of international trade.

GDP per capita growth rates were much lower in Australasia than in the other two regions in the 1870–1930 period. As in the Rio de la Plata region, growth rates also fluctuated dramatically. For the largest economy in Australasia, Australia, the crises were defining moments for its growth path. The first occurred in the early 1890s. The inflow of foreign capital dried up as British investors became increasingly worried about the Australians' ability to service their loans. The Australian economy bounced back again from the late 1890s but experienced another shock when WWI broke out. After the war, growth resumed in the 1920s, but Australia was hit again by the worldwide depression in the early 1930s, as export earnings plummeted. The combined effects of severe crises and feeble post-crisis recoveries led to anaemic GDP per capita growth rates.

According to Maddison's figures, the GDP per capita level in constant US dollars was only slightly higher in 1930 than in 1890.[2]

Unlike the other two regions there was no major crisis in the Nordic countries in the early 1890s. On the contrary growth accelerated in the period 1890–1913 compared with the period 1870–1890. In Sweden, the largest economy in Scandinavia, strong export growth was now joined by strong growth in home market industries protected by tariffs (Bohlin, 2005; Schön, 2010). Exports from Sweden increasingly came from the manufacturing industry, while they were still heavily dominated by agricultural goods in the case of Denmark and shipping in Norway. Industrial growth in these two countries was not as swift as in Sweden and in the case of Denmark in particular it was more or less exclusively oriented towards the home market. Finland was the most backward in economic structure among the Nordic countries. The country also had the lowest GDP per capita level and did not succeed in narrowing that gap until the 1930s (Jörberg & Krantz, 1973).

2.2 1930–1970

After World War I, the growth rate of the Argentinian economy slowed dramatically. The economic depression in 1929–1932 was a major turning point for the economic development of Argentina as well as for its neighbouring country, Uruguay. The already mentioned oversupply of agricultural commodities in the international markets was underlined even more by the depression in the early 1930s followed by the collapse of international trade. Unlike Australia and New Zealand, the Rio de la Plata countries did not have access to preferential treatment of their exports by the British commonwealth, so they were affected even harder by the collapse in world trade in the 1930s. With the breakdown of international trade, economic activity was directed more towards the home market, with an increasing role for the manufacturing sector and services, while the relative weight of agriculture in the economy declined (Bértola & Ocampo, 2012: ch. 4; Diaz Alejandro, 1970: ch. 2).

Industrial growth was stimulated by relative price movements. It was also stimulated by the collapse of multilateral trade, as both Argentina and Uruguay exported mainly to Great Britain but imported mainly

[2] https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-project-database-2020?lang=en.

from the USA. Forced imports from Great Britain meant even worse terms of trade (Gerchunoff & Llach, 2011). Industrialization changed the structure of imports in favour of intermediate goods, energy sources and capital goods, which required steady increases in foreign exchange. Import substitution made a limited contribution as a source of growth, both in Argentina and Uruguay, while domestic demand became the most dynamic source of growth, so the period is better defined as state-led growth (Bértola & Ocampo, 2012: ch. 4). To solve the recurrent foreign exchange crises Argentina tried to reorient industrial production towards the regional market, with some success during WWII, and even more after the war. Additionally, particularly during the 1960s, important efforts were made to attract investment by multinationals, to both solve the foreign exchange shortages and improve productivity and competitiveness. Nevertheless, policy was mainly driven by short-term needs, rather than by a strategic view of development goals (Gerchunoff & Llach, 2011; Schvarzer, 1996), and productivity gains were limited by the acquisition of mature technology and industrial plants dimensioned for larger markets than the regional (Katz & Kosacoff, 1989, 2000).

Economic development in Uruguay was in many respects similar to Argentina's. The export sector of the country was hard hit by the world-wide economic crisis in the 1930s. Uruguay restructured its agrarian sector towards the production of inputs for the local manufacturing industry. During the post-WWII period, in the context of favourable terms of trade, manufacturing grew rapidly thanks to favourable exchange rates and a labour market policy that helped the expansion of the domestic market. However, in contrast to the Argentine case, the very limited domestic market did not attract foreign manufacturing investment and did not constitute a good base for expansion towards the regional market. Domestic demand expansion lost momentum in the mid-1950s and Uruguay became one of the pioneers in demonstrating the limits of this model of industrialization (Bértola, 1990; Schlueter, 2014).

As was the case in Argentina, the 1929–1932 crisis may be seen as a watershed in Australian economic development. The role of the export sector in the Australian economy diminished in the inter-war period, while the manufacturing sector which primarily produced for the domestic market increased its share of the economy. Behind tariff protection and the natural protection offered by transport costs, an industrialization directed towards the home market unfolded (Butlin et al., 2015; Hutchinson, 2015).

As in other countries, economic growth took a hit during WWII. In the post-war period Australian growth increased, even though its GDP per capita growth was slower than in the fast-growing economies of Western Europe and Japan. The industrialization process, which had started in the inter-war period, accelerated in the 1950s and 1960s. The output of the manufacturing sector was now to an increasing extent exported, mainly to the economies of South-east Asia and New Zealand (McLean, 2013: 197–198).

Economic development in New Zealand was in many respects like that in Australia after the crisis in the 1930s. However, New Zealand failed to broaden its export sector into manufacturing in the post-war period.

The economies in the Nordic region were also hit by the crises following World War I and the breakdown of international trade in the 1930s, though not nearly as hard as the other two regions. The economic downturn during World War I as well as the post-war deflation crisis in the early twenties and the depression in the early 1930s appear as mere dents in the long-term growth path of the Nordic economies.

Due to the economic hardship caused by the occupation of Denmark and Norway by Nazi Germany and the wars in Finland, growth in the Nordic region took a hit during World War II. After the war the Nordic countries resumed their growth paths and benefited from strong economic growth in their export markets, mainly Western Europe.

Of the Nordic economies, Denmark was most similar to the Australasian and Rio de la Plata regions in its economic structure and export orientation. Consequently, it was also hard hit by the disintegration of the world market for agricultural products in the 1930s, although not to the same extent as the other two regions. Like other countries, Denmark managed to expand its manufacturing sector, in the inter-war period overwhelmingly for the domestic market, but in the post-war period increasingly also for the export market. Nevertheless a large share of Danish exports consisted of agricultural goods in the post-war period. Since Denmark largely lacked domestic resources for industrialization, it was dependent on imports of inputs and raw materials for its manufacturing industry. The lack of good growth prospects for agricultural exports compared with industrial goods and the instability of incomes due to fluctuations in export prices thus led to recurrent balance-of-payment problems for the Danish economy in this period. Although starting from a lower economic level and with a different export orientation (service

exports instead of agricultural goods) Norwegian development was in many respects similar to that of Denmark (Jörberg & Krantz, 1976).

After quite rapid economic growth in the 1930s the Finnish economy was hard hit by wars in 1939–1944. In the 1950s and the 1960s Finland had the fastest growth rate of the Nordic countries, driven by the manufacturing industry, particularly the export-oriented paper and pulp-industries (Jörberg & Krantz, 1976).

The economic downturn during the deflation crisis in the early 1920s was much more severe in Sweden than the crisis in 1929–1932. After recovery from the crisis, the Swedish economy grew strongly in the 1930s. As in other countries, growth was increasingly geared towards the home market, but export growth was also remarkably strong. Before the outbreak of World War II, the share of export in GDP was still around 20%. In the post-war period, the Swedish economy, like its Nordic neighbours, benefited from strong economic growth in its export markets, mainly Western Europe. The fast-growing sectors of the Swedish manufacturing industry increasingly produced for these export markets, while consumer goods industries producing for the home market declined or vanished. This ability to sustain an ongoing structural change was key to the successful development of the Swedish economy in this period (Jörberg & Krantz, 1976; Schön, 2010).

3 GDP and Foreign Trade

In the late nineteenth century, all the countries in our sample were peripheral in the sense that their growth was predicated on economic growth in the core of the world economy, especially the growth in Great Britain. Industrialization and economic growth in the core created demand for primary products supplied by peripheral countries. Consequently, export demand had a big role in the economic development of these countries. With an export ratio (exports divided by GDP in current prices) between 20% and 30% for most of the late nineteenth century (Fig. 2), the role of export demand in these countries was about as high as in the UK and considerably higher than in Germany and France, not to speak of the USA. If we take a population-weighted average of the latter four countries to represent the industrial core of the world at the time, we see (Fig. 2) that the export ratio in our three regions was much higher. In the Nordic countries, this high export ratio was maintained throughout the entire hundred-year period, or even increased in the post-war period.

In the other two regions, the share of export earnings in GDP tended to fall after the worldwide depression in 1929–1933.

The evolution of the export ratio of the countries had everything to do with what they produced and exported. At the start they all mainly exported primary and agricultural goods, but the Nordic countries, particularly Sweden, succeeded in steadily changing and upgrading the composition of their exports towards more manufactured goods. The Rio de la Plata countries, on the other hand, remained stuck with the same type of commodity basket in their exports throughout the entire hundred-year period. After World War II, the Australasian countries managed to diversify their exports away from the primary goods sector to

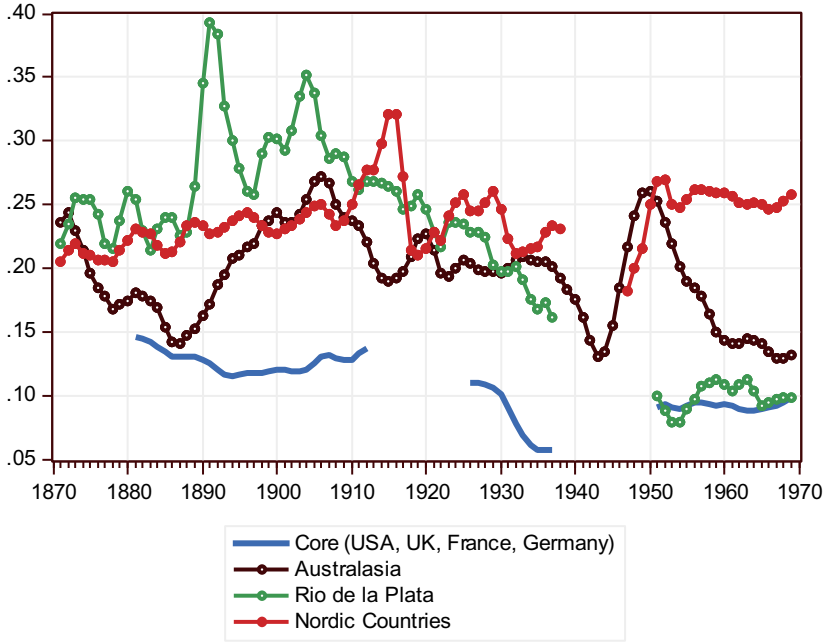

Fig. 2 Export share in three regions and the industrial core, 1870–1970 (*Sources* Core countries, Mitchell [1983, 2003]; other regions, see Appendix. *Note* Centred 3-year moving average)

some degree, but the shift was much less pronounced than in the Nordic countries.[3]

3.1 *Trade Shares and Terms of Trade*

Export earnings and their capacity to finance imports depended on export prices and import prices as well as export volumes. Figure 3 shows how the commodity terms of trade evolved in the three regions. We see that in the late nineteenth century there was an upward trend amid sharp fluctuations for all three regions. The long-run trend for the twentieth century was pretty much stable for all three of them. There is, however, one important difference between the three regions. While the terms of trade were quite stable for the Nordic countries they fluctuated wildly for the Australasian and Rio de la Plata countries. This obviously influenced short-run fluctuations in export earnings for the Southern Countries. Increased export earnings—whether through increased export volumes or favourable prices, which often coincided—stimulated the export sector and indirectly production for the home market as well. The flipside of this was that when terms of trade worsened, the business cycle turned downwards, so that in these regions the trade cycles also translated into cycles of real output (for a long-term study of the Uruguayan case that confirms this, see Bértola & Lanzilotta, 2021). It has been argued that fluctuations in the terms of trade also affect the long-term growth rate of a country negatively, quite irrespective of its long-term trend (Blattman et al., 2007).

We have already seen that the evolution of the export ratio differed between the regions. The growth rate in export ratios may be decomposed into a price and volume component:

$$(p_x - p_y) + (x - y)$$

where p_x = growth rate in export prices, p_y = growth rate in the GDP deflator, x = growth rate in export volumes, y = growth rate in real GDP.

In Table 2 this decomposition of the export share is shown for three periods, 1870–1913, 1913–1938 and 1946–1970. In the 1870–1913 period, the export share increased for all countries in our sample, except

[3] For an overview of the evolution of export specialization in the three regions, see Chapter 3.

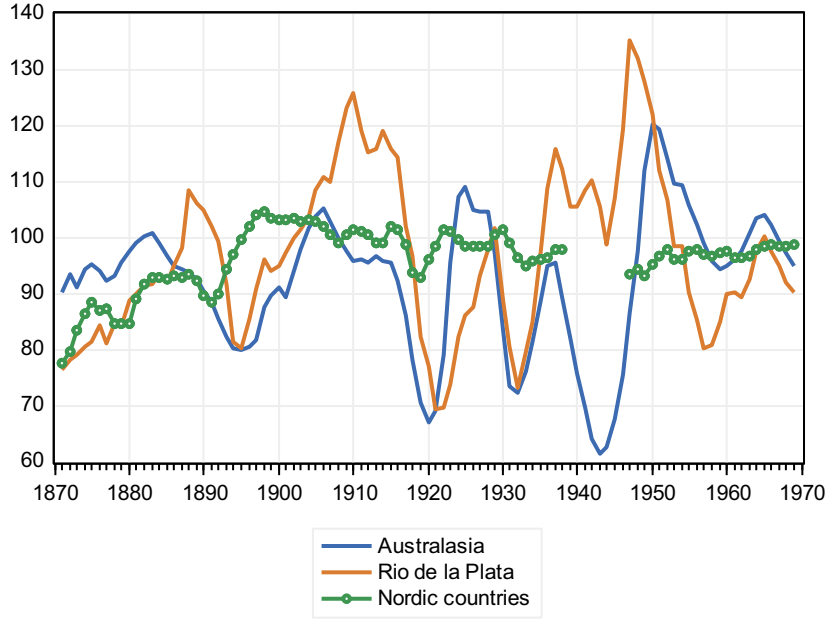

Fig. 3 Commodity terms of trade in three regions (*Sources* see Appendix. *Note* Centred three-year moving average)

Uruguay. In the Nordic countries and Australasia, the increase was caused by a faster increase in the export volume than in real GDP. In Argentina, the increase was caused by export prices rising more or falling less than the GDP deflator while the export volume still increased slightly more than real GDP. Uruguay experienced similar price movements as Argentina but here the export share fell because of a slower growth in the export volume than in real GDP.

In the period 1913–1938, the trend in the export share fell in all countries except New Zealand, where according to our data growth in the export volume was higher than the sluggish growth in GDP, which compensated for adverse price movements. The fall in the export share was most dramatic in the Rio de la Plata region. It was mainly caused by export prices falling relative to the GDP deflator, which was inadequately compensated for by increases in export volumes.

Table 2 Average annual export share growth (percentage growth rate of exponential trend), decomposed into price and volume changes, 1870–1913, 1913–1938 and 1950–1970

	1870–1913			*1913–1938*			*1946–1970*		
	$p_x - p_y$	$x - y$	*Export share*	$p_x - p_y$	$x - y$	*Export share*	$p_x - p_y$	$x - y$	*Export share*
Australasia	**–0.3**	**1.0**	**0.7**	**–1.4**	**1.3**	**0.0**	**–2.7**	**–0.4**	**–3.3**
Australia	–0.4	1.1	0.7	–1.5	1.2	–0.2	–3.2	–0.3	–3.8
New Zealand	0.5	0.3	0.8	–1.2	1.7	0.6	–0.7	–0.6	–1.0
Rio de la Plata	**1.0**	**–0.2**	**1.0**	**–2.5**	**0.3**	**–2.3**	**0.1**	**–1.0**	**–1.0**
Argentina	1.1	–0.1	1.2	-2.8	0.9	-2.0	0.5	–0.9	–0.5
Uruguay	0.8	–1.1	–0.3	–0.6	–3.9	–4.5	–2.6	–1.6	–4.4
Nordic countries	**–0.3**	**0.8**	**0.6**	**–1.7**	**1.2**	**–0.6**	**–2.0**	**3.0**	**0.9**
Denmark	0.1	0.9	1.0	–2.0	1.4	–0.8	–2.3	3.7	1.3
Sweden	–0.6	1.1	0.5	–1.1	–0.4	–1.6	–2.0	2.6	0.4
Norway	–0.5	0.7	0.3	–3.1	1.5	–1.6	–1.8	2.9	1.2
Finland	0.1	0.5	0.6	–1.2	3.5	2.3	–1.8	3.1	1.3

Sources See Appendix

In the post-war period, 1946–1970, export shares increased in the Nordic countries because export volumes grew faster than GDP, which more than compensated for the fact that export prices rose less than the GDP deflator. In the Australasian countries, the export share fell because the increase in export volumes was not high enough to compensate for a fall in export prices relative to the GDP deflator. The export share fell dramatically in Argentina and Uruguay primarily because export prices developed unfavourably compared to the GDP deflator, but also because export volumes grew less than real GDP.

4 The Theory of Balance-Of-Payments-Constrained growth—Thirlwall's Law

In an influential paper from 1989 Paul Krugman (1989) pointed to a strikingly strong empirical correlation between the ratio of income elasticities for exports and imports and long-run growth rates of nations.

Krugman also noted that price elasticities were of minor importance in explaining demand for imports and exports. The same empirical regularity had already been pointed out by Houthakker and Magee (1969) for a group of industrial countries in the 1950s and 1960s and Krugman confirmed it for a group of industrial countries in the 1970s and 1980s. He showed that the data points in a graph with the ratio of export and import income elasticities on the *y*-axis and GDP growth rates on the *x*-axis were scattered around a 45-degree linear trend with an intercept close to zero. He termed the relationship the 45-degree rule. Such a strong empirical regularity calls for explanations. Krugman ruled out "a priori" that income elasticities in exports and income could explain growth rates, since "we all know that differences in growth rates among countries are primarily determined in the rate of growth of total factor productivity" (Krugman, 1989: 1037). He concluded that the long-term and quite striking differences between countries in their income elasticities for imports and exports must be explained by supply-side characteristics, so that growth determines income elasticities in trade and not the other way around. He then proceeded to outline a trade theory in which increasing returns and monopolistic competition play a large part in determining divergences in income elasticities.

Ten years earlier Thirlwall had already pointed to the same correlation between income elasticities in trade and growth rates of countries (Thirlwall, 1979, 1983, 1997, 2011a, 2011b, 2013) but he reversed the causal connection. Thirlwall proceeded from the empirically well-founded assumption that in the long run the value of imports and exports must balance for a country, or else the country would run up unsustainable debts or alternatively pile up foreign assets indefinitely. In other words, in the long term the balance of payments will tend to be zero. This means that the requirement for sustained balance-of-payments equilibrium is that the current values of exports and imports grow at the same rate as expounded in Eq. (1).

$$x + p = m + p^* + e \tag{1}$$

All variables in (1) are expressed in rates of change, where x = volume of exports; p = domestic prices; m = volume of imports; p^* = foreign prices; and e = the exchange rate.

The growth rates in import and export volumes can be expressed by customary export and import demand functions, Eqs. (2) and (3).

$$x = \eta(p - p^* - e) + \varepsilon z \tag{2}$$

$$m = \psi(p + e - p^*) + \pi y \tag{3}$$

where η = the price elasticity of exports, ε = the income elasticity of exports, z = growth of world income, or rather the income of trading partners, Ψ = price elasticity of imports, π = income elasticity of imports and y = growth of domestic income.

By inserting (2) and (3) in (1) we arrive at the balance-of-payments-constrained growth rate, y_B:

$$y_B = \frac{(1 + \eta + \psi)(p - p^* - e) + \varepsilon z}{\pi} \tag{4}$$

The import and export price elasticities are both expected to be negative. In order for them to have a positive impact on domestic growth following increased price competitiveness (e.g. as a result of a depreciation of the exchange rate) the sum of their absolute values has to be larger than unity. This is the so-called Marshall-Lerner condition, which can be found in textbooks on international economics. It has been shown empirically that in the very long run, there is no trend in the commodity terms of trade for most countries (Ocampo & Parra-Lancourt, 2010), although this does not necessarily hold for shorter periods. If there is no long-term trend in the terms of trade and/or the sum of the price elasticities of exports and imports does not deviate much from unity, Eq. (4) reduces to:

$$y_B = \frac{\varepsilon}{\pi} z \tag{5}$$

Or under the same assumptions

$$y_B = \frac{x}{\pi} \tag{5b}$$

Equation (5) expresses Thirlwall's Law, which says that in the long run the growth of a nation is dependent on its export growth divided by the price elasticity of imports. The growth of exports is in turn dependent on

non-price competitiveness expressed by the size of the income elasticity of demand for exports.

The balance-of-payments constraint may be temporarily alleviated if there is an inflow of capital which finances imports that are not covered by export receipts, as elaborated by Thirlwall and Hussain (1982) (Thirlwall, 2013: ch. 5). Taking capital inflow into account, Eq. (1) is modified into:

$$\omega(x + p) + (1 - \omega)(c + p) = m + p^* + e \tag{1b}$$

where c = the rate of growth of the volume of capital inflow; ω = the share of nominal imports covered by export receipts. By inserting (2) and (3) into (1b) we arrive at:

$$y = \frac{(1 + \omega\eta + \psi)(p - p^* - e) + \omega\varepsilon z + (1 - \omega)c}{\pi} \tag{4b}$$

The first term in Eq. (4) shows the effects on economic growth resulting from changes in the commodity terms of trade given the price elasticities for exports and imports; the second term expresses how growth among the trading partners affects the growth rate of a nation given the income elasticity of demand for its exports; and the last term expresses the impact on growth resulting from inflow or outflow of capital. If there is no trend in the terms of trade and/or the import and export price elasticities are not large enough to have any impact, Eq. (4b) reduces to:

$$y = \frac{\omega\varepsilon z + (1 - \omega)c}{\pi} \tag{5c}$$

From (5c) it follows that the growth rate of a country is the weighted sum of the growth of exports and real capital inflow divided by the income elasticity of demand for imports. If the growth rate of real capital imports is higher than the export growth rate, the country's growth rate will be enhanced; if it is less or negative (i.e. there is capital outflow) the growth rate will be reduced. Obviously, it would be unsustainable for a country to have a larger growth rate in its real capital inflow than in its growth rate for a long period, since that would continuously increase its foreign debt burden. It is therefore of some interest to examine how the growth rate would be affected if, starting from a deficit in the current account, its share of GDP stays the same. In that case the growth in the inflow of

capital must be the same as the growth rate in GDP and we get:

$$y = \frac{\omega x}{\pi - (1 - \omega)} \tag{5d}$$

With reasonable values for the parameters in (5d), it cannot deviate much from the simple Thirlwall rule in (5), which means that the growth of exports divided by the income elasticity of demand for imports drives the GDP growth rate.

So, Thirlwall concluded that growth of exports ultimately drives growth rates. According to him, given the balance-of-payments requirement the growth of a country is constrained by the growth of demand from the rest of the world for its products. As to supply-side factors, Thirlwall pointed out that slow growth imposed by the balance-of-payments constraint in and of itself hampers productivity since there is a well-known empirical correlation between growth and productivity, as shown by the literature concerning Verdoorn's law. Moreover, the balance-of-payments constraint can also influence growth negatively in that it hampers the possibility to import inputs and technologies that stimulate productivity. In his polemic against Krugman, Thirlwall (1991) also stressed that differences in income elasticities for countries' exports to a certain extent are exogenously determined by their endowments of natural resources and the characteristics of goods produced, which are the products of history and independent of the growth of output. To this can be added that certain natural resources lend themselves more to further processing and diversification of output than others (Hausmann et al., 2007), such as the forest-industry complex in Sweden compared with the agricultural commodities exported by the Australasian and Rio de la Plata countries.

Thirlwall's Law has given rise to a voluminous empirical literature. It has been tested and found accurate on different data sets in numerous articles and books (Bértola et al., 2002; López & Cruz, 2015; López & Thirlwall, 2006; Setterfield, 2012; Thirlwall, 2013; Thirlwall & Hussain, 1982). Most of the tests have been done on data for industrialized countries in the late twentieth century, but there are also some empirical results from other parts of the world and for other time periods.

Some authors have interpreted Thirlwall's Law in a different way. For them, income elasticities of demand for exports and imports are seen as a mixed result of demand and supply forces, and, among the latter, particular attention is paid to the national systems of innovation (Bértola & Porcile, 2006; Fagerberg, 1987, 1994). Following Verspagen

(1993), changes in the productivity gap depend on specialization-induced technical change, domestic technological efforts and technological spill-overs. Furthermore, income elasticities of demand also depend on market shares and different institutional aspects affecting foreign trade (tariffs, subventions and more) (Bértola & Porcile, 2006).

In the following two sections we shall explore to what extent Thirlwall's Law can shed some light on the varying growth process in our three groups of countries.

5 Estimation of Import and Export Demand Functions

In order to test whether Thirlwall's Law may explain the path of economic growth of our group of countries we need to estimate the parameters in the export and import demand functions in Eqs. (2) and (3).

In order to obtain estimates of the parameters in the export demand function we have regressed the log of export volume against a constant, the log of export prices divided by foreign prices and the log of GDP in the export markets. For the price variable, we have used indexes of export prices in US dollars divided by a price index for world exports in US dollars.[4] For the income variable, we have calculated a weighted average of the GDP in the export markets, where the countries receiving the exports have been weighted by their shares of the total export value of the exporting country.

The parameters in the import demand function have been analogously estimated by regressing the log of the import volume against a constant, the log of import prices divided by home prices and the log of domestic GDP. For home prices, we have mostly used the GDP deflator for lack of better alternatives. This is not ideal, since arguably the GDP deflator is heavily influenced by prices in the non-tradable sector of the economy. For Sweden, Denmark and Finland we have therefore constructed price indexes that are weighted averages of the deflators of the manufacturing and agricultural sectors. These should arguably better reflect the evolution of prices of goods competing with imports.

Since we are dealing with time-series data, we need to investigate the order of integration of the various variables. The variables are generally

[4] Sources for the data used are given in Appendix.

non-stationary and I(1) variables. In order to use them in level form for estimation, they need to be co-integrated. To estimate import and export demand functions we have used an autoregressive distributed lag (ARDL) model.[5] The use of ARDL models has the advantage that they may also be used to test for a long-run level relationship between the variables. This test, the Bound test, has the advantage that it can be used irrespective of whether the included variables are I(0) or I(1) (Pesaran et al., 2001). In order to choose the number of lags in the ARDL models we have used the Schwarz information criterion. In searching for the appropriate model, the maximum number of lags allowed has been set to 2. If the Schwarz information criterion gives almost identical values for different models, we have generally chosen the simplest one. All estimations have been carried out in Eviews 12.

We have estimated export and import demand functions for the entire period 1870–1970. It might be argued, however, that the parameters are not representative for the entire period. We have therefore also made estimations for the period 1870–1913, usually called the first globalization period (O'Rourke & Williamson, 1999) and the post-war period 1950–1970. We also tried to estimate export and import demand functions for the period 1913–1938 and the inter-war period 1922–1938. These periods were characterized by much turbulence with dramatically increased inflation and increasing trade barriers during WW1; deflation crises in the aftermath of the war; the return to the gold standard in the 1920s; the depression and the following breakdown of the gold standard and shrinking world trade in the 1930s. It therefore proved difficult to obtain reliable estimates. They proved to be very sensitive to the inclusion or exclusion of yearly observations at the beginning or end of the period, and the choice of the order of lags.

For both the 1870–1913 period and the period 1950–1970 as well as for the entire period 1870–1970, the estimated parameters have the expected signs and look reasonable in size. For example, the estimated income elasticities for the period 1950–1970 are mostly similar to those obtained by Houthakker and Magee (1969) for the period 1951–1966 for countries where comparisons can be made. The estimates of income elasticities seem generally more reliable than those for price elasticities, meaning that they exhibit much lower standard deviations. The absolute

[5] The same strategy to estimate export and import demand functions have been advocated by Senhajidi and Montenegro (1998) and Senhadji (1998).

values of the estimated price elasticities are generally lower than income elasticities and are often not statistically significant, according to conventional criteria. Price elasticities are also generally lower or less statistically significant in the post-war period compared to the first globalization period, meaning that the role of price competitiveness had declined.

5.1 Export and Import Demand Functions, 1870–1970

Generally, the income elasticities for both exports and imports are statistically significant, while the corresponding price elasticities often are not. For the entire period 1870–1970 the export income elasticities are much higher for the Nordic countries than for the other two regions, while the difference is not so pronounced when it comes to import income elasticities. If we compare the income elasticities for exports between the sub-periods it is also remarkable that these were quite stable over time in the Nordic countries while they declined in the other regions.

5.2 Export and Import Demand Functions, 1870–1913

The estimated price and income elasticities for exports are all of the expected signs. Most of them are also statistically significant according to conventional criteria. The income elasticities were in all cases higher in absolute value than the price elasticities. They are also estimated with a higher precision than the corresponding price elasticities, i.e. their standard deviations are lower. The estimated income elasticities for the Nordic countries were generally around 1.5 or slightly higher, while they were slightly higher for the Australasian countries. In the Rio de la Plata region, Argentina stands out with an exceptionally high-income elasticity of demand for exports of around 3. Argentina was able to exploit the growing demand for wheat, wool and other agricultural products by expanding the land area devoted to agricultural production and by rapidly augmenting its labour force through immigration, mainly from southern Europe. Uruguay, on the other hand, lacking an open frontier and having natural resources that were not as good for growing agricultural crops as Argentina, stands out with an exceptionally low export income elasticity of around unity.

As in the case of the export demand function, the income elasticities for imports are estimated with higher precision than the corresponding price elasticities. The latter were in many cases not statistically significant

according to conventional criteria. The estimated income elasticities for imports were in all cases except Finland lower than the export income elasticities. The Nordic countries had higher income elasticities for their imports than the other countries in our sample. Uruguay stands out with a low-income elasticity of demand for imports of around 0.7.

5.3 Export and Import Demand Functions, 1950–1970

For the period 1950–1970 all three Scandinavian countries had income demand elasticities for their exports of around 1.5, while that of Finland was slightly lower. These countries succeeded in reorienting their exports towards more manufactured goods, and within this group towards goods for which the income elasticity of demand was higher than for more traditional manufactured goods.

In the other regions, Australia's income elasticity for exports is estimated to be around 1.3, which was clearly lower than in the Scandinavian countries. Australia also managed to reorient its exports towards more manufactured goods, but not to the same extent as in the Nordic region. Argentina and Uruguay as well as New Zealand still mainly exported the same types of goods that dominated their exports in the first globalization period, 1870–1913. This explains the remarkable gap between the income elasticity of demand for their exports and those in the Nordic region. The income elasticity of demand for exports is estimated to be about 0.7 for Argentina and New Zealand. For Uruguay it is even lower, although the estimate is not statistically significant according to conventional criteria.

In the Nordic countries there was not much change in the estimated income elasticities of imports if we compare the late nineteenth century with the period 1950–1970. In the Swedish case the income elasticities of demand for imports and exports were roughly the same, meaning that according to Thirlwall's Law Sweden should grow at the same rate as its trading partners. Denmark and Norway both had income elasticities for imports of around 1.3, which was slightly lower than their corresponding income elasticities for exports. In all Nordic countries price elasticities for imports were markedly lower than their corresponding income elasticities and also estimated with less precision, or of lower significance to use statistical jargon.

As in the case of the Nordic countries our estimated income elasticity of imports did not change much between the late nineteenth century and the post-war period for Australia. It was 1.1 in the first period and 1.2 in

the latter. In the case of New Zealand and the Rio de la Plata region the change was more dramatic. In New Zealand it declined from 1.1 to 0.7, while in the Rio de la Plata countries we could not obtain meaningful estimates for the import demand functions in this period. Constrained by lower growth in export earnings the countries in this region were forced to cut down on import growth and rely more on a strategy of import substitution. In the case of Uruguay, the trend in import volume even declined in the 1950–1970 period according to our data, despite sluggish economic growth.

Some interesting points can be made by comparing income elasticities in the 1870–1913 period and in the post-war period. In the first globalization period, income elasticities of exports in the Nordic countries were similar to, or only slightly lower, than in Australasia, with the exception of Denmark which was somewhat higher. As already pointed out Argentina stands out with an exceptionally high elasticity of 3. In the post-war period, the export income elasticities of the Nordic countries remained similar to the 1870–1913 period. The same goes for income elasticities of imports. In Australasia and the Rio de la Plata region, on the other hand, the income elasticities of exports had dropped dramatically. Income elasticities of imports also dropped, except for Australia, but not as much. The limited transformation of the goods composition of exports in the Australasian countries or the total lack of it in the Rio de la Plata countries in the twentieth century is reflected in the decline in estimated export elasticities. Since in the long run the balance-of-payments constraint is binding, this negatively impacted the growth rates of the Australasian and particularly the Rio de la Plata countries. According to Thirlwall's Law, if the growth of exports declines, whether through an unfavourable development of the income elasticity of demand for exports or a low-income growth in export markets, it can be counteracted by a decline in the income elasticity of imports. This happened to a certain extent, both in the Australasian and the Rio de la Plata countries. However, there is a limit to the extent that growth rates can be upheld by an import substitution strategy, especially in relatively small economies. The balance-of-payments constraint forced these countries to lower their import growth, reflected in declining income elasticities of demand, but this also limited the possibility of importing investment goods and other inputs for growth.

6 Predictions of Thirlwall's Law and Economic Growth in Three Regions

The estimated income and price elasticities for imports and exports make it possible to test to what extent Thirlwall's Law predicts actual growth rates for our group of countries in the period 1870–1970. Thirlwall's Law may be tested according to Eqs. 5 or 5b. The former is considered to be a more stringent test, since it is based on predicted growth rates in exports derived from estimated income elasticities of exports and growth rates of GDP in the export markets. Another test that has been seen in the literature is based on a comparison between estimated income elasticities of imports and the elasticities implied by Eq. 5b, given the actual growth rates in exports and GDP.

In Table 5 we have put together data on export and import growth for our countries together with the estimated elasticities from Tables 3 and 4. For the entire period 1870–1970 Thirlwall's Law predicts growth rates quite well for Sweden and Denmark while it overpredicts the growth rate for Norway and markedly so in the case of Finland. In the case of the Australasian countries the predicted growth rates are not wide off the mark, while for the Rio de la Plata countries, on the other hand, the predictions of Thirlwall's Law are far less accurate. Since we have already established that the estimated income elasticities of exports and imports changed over time, particularly for the Australasian and Rio de la Plata countries, it is, however, more interesting to compare actual growth rates with the growth rates predicted by Thirlwall's Law for the two periods 1870–1913 and 1950–1970. For Argentina and Uruguay, it was only possible to obtain meaningful estimates of the required elasticities for the period 1870–1913, so we cannot make the comparison for these countries except for that one period.

If we look at the first globalization period, 1870–1913, we see from Table 5 that Thirlwall's Law in most cases predicts the actual growth rates quite accurately, at least when we consider the weak form of the test, except for Australia, where the predicted growth rates according to Thirlwall's Law are overstated by roughly 25–30%. For most countries, the more stringent test fares slightly worse. In this case the Danish growth rate is also overestimated by roughly 25%. Given that the data underlying the estimates are far from perfect we cannot expect to get any precise concordance between predicted and actual growth rates of exports. Moreover, in this period, the evolution of the terms of trade and

Table 3 Estimates of long-run price and income elasticities for exports in the 1870–1970, 1870–1913 and 1950–1970 periods

Country	*ARDL*[(1)]	*Price el*	*Standard dev. Price el*	*Income el*	*Standard dev. Price el*	*Bound F-stat*[(2)]	*BG F-test, p-value*
1870–1970							
Sweden	1,1,1	–0.67	0.42	1.45***	0.09	3.26	0.32
Denmark	2,1,0	–0.29	0.30	1.60***	0.09	5.24	0.11
Norway	1,0,0	–0.69***	0.15	1.41***	0.04	26	0.15
Finland	1,2,0	–2.32	0.79	2.07***	0.20	4.89	0.03
Australia	1,0,0	–1.71**	0.73	1.00***	0.11	8.13	0.22
New Zealand	1,1,0	–3.31	2.64	1.14***	0.32	6.93	0.16
Argentina Uruguay	2,1,0	–0.32	1.26	0.60*	0.66	3.02	0.00
1870–1913							
Sweden	1,2,2	–1.05**	0.41	1.49***	0.09	4.03	0.96
Denmark	1,0,0	–1.08**	0.33	1.92***	0.10	11.34	0.35
Norway	1,0,0	–1.13	0.47	1.38***	0.12	8.7	0.50
Finland	1,0,0	–0.40	0.31	1.57***	0.17	9.30	0.63
Australia	1,0,0	–1.06***	0.15	1.78***	0.05	17.02	0.88
New Zealand	1,1,1	–1.13***	0.20	1.86***	0.06	10.28	0.02
Argentina	1,0,0	–0.95***	0.30	2.99***	0.16	9.11	0.59
Uruguay	1,0,0	–0.44	0.60	1.08***	0.28	4.1	0.95
1950–1970							
Sweden	1,0,0	–1.24*	0.67	1.51***	0.08	21	0.30
Denmark	1,0,0	–0.73***	0.21	1.54***	0.04	38.75	0.13
Norway	1,0,0	–0.07	0.12	1.57***	0.03	44.4	0.12
Finland	1,1,0	–0.29	0.12	1.31***	0.10	33.81	0.72
Australia	1,2,0	0.65	0.55	1.34***	0.20	11.2	0.60
New Zealand	1,1,2	–0.57***	0.17	0.71***	0.07	5.34	0.14
Argentina	2,1,1	–0.28	0.16	0.77***	0.08	23.04	0.30
Uruguay	1,1,0	0.69	0.48	0.53	0.31	4.01	0.91

Sources See Appendix

Note ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively. (1) Number of lags in the independent variable and in the price and quantity variables, respectively. (2) Critical bounds for the *F*-test for I0 and I1 series (lower and upper bounds): 10% significance (2.63, 3.35), 5% significance (3.10, 3.87), 1% significance (4.13, 5.00)

Table 4 Estimates of long-run price and income elasticities for imports in the 1870–1970, 1870–1913 and 1950–1970 periods

Country	*ARDL* (1)	*Price el*	*Stand dev. Price el*	*Income el*	*Stand dev. Price el*	*Bound F-stat* (2)	*BG F-test, p-value*
1870–1970							
Sweden	1,0,1	–1.51**	0.72	0.84***	0.14	7.44	0.10
Denmark	1,0,1	–1.00***	0.13	1.09***	0.02	11.06	0.21
Norway	2,2,2	–0.21***	0.41	0.89***	0.13	4.91	0.60
Finland	1,01	–1.19**	0.56	0.71***	0.21	9.07	0.49
Australia	2,1,1	–0.24	0.19	0.89***	0.04	9.08	0.12
New Zealand	1,1,2	–0.18	0.39	1.08***	0.05	9.14	0.05
Argentina	1,1,2	–0.31	0.48	0.64***	0.09	4.37	0.04
Uruguay	1,1,2	–0.56	0.27	0.56***	0.09	4.13	0.35
1870–1913							
Sweden	1,0,1	–0.35	0.68	1.29***	0.28	4.19	0.26
Denmark	1,0,0	–1.25***	0.39	1.22***	0.10	10.67	0.47
Norway	2,0,1	–1.19***	0.22	1.23***	0.10	6.51	0.71
Finland	1,1,0	–0.05	0.21	1.75***	0.14	11.76	0.27
Australia	2,1,1	–0.01	0.52	1.10***	0.09	5.90	0.55
New Zealand	2,1,2	–0.92	0.61	1.09***	0.11	5.02	0.04
Argentina	1,0,1	–0.51**	0.69	1.03***	0.11	4.67	0.19
Uruguay	2,0,0	–0.67*	0.37	0.66***	0.1	6.21	0.77
1950–1970							
Sweden	1,0,1	0.51	0.58	1.51***	0.09	9.58	0.75
Denmark	1,0,0	–1.11***	0.19	1.32***	0.12	46.2	0.84
Norway	2,2,0	–0.61***	0.12	1.22***	0.05	32.14	0.17
Finland	2,2,0	–0.25	0.19	1.58***	0.05	43.03	0.11
Australia (1946–1970)	1,0,1	0.36	0.61	1.24***	0.41	5,52	0.82
New Zealand (1951–1970)	2,0,1	–0.75***	0.24	0.67***	0.13	8.13	0.69
Argentina	1,0,1	–0.42	0.50	0.32	0. 50	2.27	0.17

Sources See Appendix

Note ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively. (1) Number of lags in the independent variable and in the price and quantity variables, respectively. (2) Critical bounds for the *F*-test for I0 and I1 series (lower and upper bounds): 10% significance (2.63, 3.35), 5% significance (3.10, 3.87), 1% significance (4.13, 5.00)

the price elasticities of imports and exports should also have had some influence on growth rates. Capital inflows and outflows were also substantial for all our countries in this period. They may have had even greater effects on growth rates. Particularly in the case of Argentina and Australia huge capital inflows in the 1870s and 1880s were interrupted by financial and banking crises in the early 1890s, which reversed the tide and led to substantial capital outflows. There have been attempts in the literature to estimate the impact of price movements as well as capital inflows and outflows (Thirlwall & Hussain, 1982). The reasoning is that since Thirlwall's Law is based on a national income accounting identity we should be able to estimate the importance of prices residually if we have good data on capital flows. It is hard to get accurate capital flow data for the entire hundred-year period for the countries in our sample, and we also regard the underlying historical national accounts data and hence the estimated trade elasticities as being too error-prone to make such an attempt.

Among the Nordic countries, Thirlwall's Law predicts growth rates quite successfully for Sweden for the period 1950–1970, and slightly less so for Denmark, while in the case of Norway, growth is overestimated by about 25–30%. For Finland, Thirlwall's Law in its strict form (Eq. 5) underestimates growth by about 20% while in its weak form (Eq. 5b) it comes closer to the actual growth rate. In the case of Australia, the weak form of Thirlwall's Law performs well for the 1950–1970 period, while the more stringent formulation (Eq. 5) overestimates the actual growth rate, apparently because the growth rate in exports is exaggerated when calculated according to the formula in Eq. 5. For New Zealand, Thirlwall's Law overestimates growth rates by about 30% in this period, even though export growth is predicted well. In order for the simple model to predict growth rates with any precision for this country the income elasticity of demand would have had to be around 0.9, while according to our estimate it was roughly 0.7. In other words, New Zealand did not reduce imports and replace them with domestic production to the extent predicted by the simple model of Thirlwall's Law, assuming our estimates of the import income elasticities are nearly correct. Apart from obvious problems with the quality of data underlying our estimates, this indicates that the evolution of the terms of trade was not without importance. In both Australasia and the Rio de la Plata region the evolution of terms of trade was characterized by wild swings, which was not the case in the Nordic countries.

Table 5 Actual growth rates and predictions according to Thirlwall's Law for the periods 1870–1970, 1870–1913 and 1950–1970

	Export income elasticity	*Import income elasticity*	*Export growth*	*GDP growth of export recipients*	*GDP growth*	γ_B *according to Eq. 5*	γ_B *according to Eq. 5b*
1870–1970							
Sweden	1.45	1.09	3.3	2.2	2.8	2.9	3.0
Denmark	1.60	1.10	3.2	2.1	3.0	3.1	2.9
Norway	1.41	0.90	3.4	2.4	2.8	3.8	3.8
Finland	2.07	0.71	3.1	1.9	2.9	5.6	4.4
Australia	1.00	0.89	2.5	2.3	2.6	2.6	2.8
New Zealand	1.14	1.08	3.0	2.1	2.8	2.2	2.8
Argentina	0.6	0.64	2.75	2.2	2.0	4.3	4.0
Uruguay		0.56	0.7	2.8	2.6		1.3
1870–1913							
Sweden	1.49	1.43	3.3	2.1	2.2	2.5	2.3
Denmark	1.92	1.22	3.6	2.1	2.7	3.4	2.9
Norway	1.38	1.23	2.6	2.2	1.9	2.5	2.1
Finland	1.57	1.75	3.14	2.3	2.7	2.0	1.8
Australia	1.57	1.10	3.9	2.2	2.8	3.0	3.6
New Zealand	1.86	1.09	4.1	2.2	3.8	3.7	3.7
Argentina	2.99	1.03	5.7	2.1	5.8	6.1	5.5
Uruguay	1.08	0.66	2.6	2.6	3.7	4.3	3.9
1950–1970							
Sweden	1.51	1.51	6.59	4.3	4.3	4.3	4.4
Denmark	1.54	1.32	6.63	4.2	4.3	4.9	5.0
Norway	1.57	1.22	6.55	4.2	4.2	5.3	5.4
Finland	1.31	1.58	6.75	4.3	4.6	3.6	4.3
Australia	1.34	1.24	5.42	5.5	4.5	6.0	4.4
New Zealand	0.71	0.67	3.39	4.8	3.8	5.0	5.1
Argentina	0.77	NA	3.98	4.7	3.5	-	-

Note Growth rates in GDP and exports are growth rates of exponential trends

7 Summary and Conclusion

In this chapter we compare the economic performance of Australasia (Australia and New Zaland), the Nordic countries (Denmark, Norway, Sweden and Finland) and the Rio de la Plata region (Argentina and Uruguay) in the period 1870–1970. These three regions were all peripheral to the industrial core in the Atlantic economy in the late nineteenth century. In all of them exports played a relatively large role in their economies. Initially they were all also dependent for their exports on a few staple goods, based on their respective resource endowments. In the late nineteenth century there were large differences in the economic wellbeing of these regions as measured by their level of GDP per capita. Australasia, at that time arguably the richest region in the world, was much richer than the Nordic countries, with the Rio de la Plata region in between. One hundred years later, the Nordic countries had caught up with, or in the case of Sweden and Denmark even surpassed, Australasia, while the Rio de la Plata region lagged far behind. We explore this development from the vantage point of the relationship between foreign trade and economic growth.

Besides differences in GDP per capita growth rates, the three regions differed in how their exports evolved. The Nordic countries succeeded in maintaining or even raising their share of exports in GDP, while the export share of the other regions fell in comparison to the level in the late nineteenth century. This was related to the evolution of the commodity composition of exports of the various regions. The Nordic countries, particularly Sweden, managed to diversify their exports in the twentieth century into more and more industrial goods. Australasia did this to a much lesser degree and only in the post-war period, while the Rio de Plata region more or less exclusively exported the same types of agricultural products throughout the entire period. Since demand growth was much slower for agricultural goods than for industrial products, due to lower income elasticity of demand, the share of exports in GDP declined for countries that did not manage to diversify out of the specialization pattern formed in the late nineteenth century. Moreover, primary and agricultural products underwent heavy price fluctuations, which added to the problems of countries heavily reliant on them for their exports. In periods of sharp declines in export prices it was difficult for these countries to finance imports of industrial goods, whose prices were much more

stable. Consequently, these countries had recurrent balance-of-payment problems.

Economists from different traditions have established that there is strong positive correlation between the growth rate of a country and the ratio of its export growth divided by its income elasticity of demand for imports. Moreover, it has been established that in the long run the growth of exports of countries is primarily determined by non-price competitiveness as expressed in the income elasticity of demand. We arrive at the same conclusion when estimating export and import demand functions for the seven countries in our sample for the period 1870–1970, as well as for the periods 1870–1913 and 1950–1970. From the reasonable assumption that in the long run the value of exports and imports of countries must balance, and observation of the negligible role of the commodity terms of trade for the long-term growth of exports and imports, Thirlwall derived what has been called Thirlwall's Law. In its strong form the law states that the growth rate of a country is equal to the ratio between the income elasticities of demand for its exports and imports times the growth rate in its export markets. Thirlwall's Law predicts actual growth rates reasonably well for the Nordic countries, particularly Sweden, in all three periods, and also performs reasonably well for Australasia. In the case of the Rio de la Plata region the predicted growth rates come close to the actual rates in the 1870–1913 period, while for the 1950–1970 period it was not possible to obtain the required elasticities to test the model. While this may partly be the result of errors in the dataset, since historical national accounts data are very much error-prone, it also shows that the evolution of the terms of trade and capital flows had a non-negligible influence, especially on the Rio de la Plata and the Australasian regions. Since Thirlwall's Law is essentially based on a national income accounting identity it should be possible, with accurate data and good estimates of the required elasticities, to quantify the respective influences of terms of trade and capital flows on growth rates. However, we have not deemed the data accurate enough for such an endeavour. Nonetheless it goes without saying that for the Australasian and Rio de la Plata regions, the major influence on the growth of exports over the hundred years period was also the evolution of the income elasticity of demand for their export goods.

Can we then conclude that differences in export growth rates are the dominant factor behind the differences in growth rates among the

countries in our sample? That would obviously be too rash a conclusion. The observed correlation between export growth divided by the income elasticity of imports can be and has been interpreted in different ways. Broadly speaking we may distinguish between supply-oriented and demand-oriented explanations.

In a supply-oriented theoretical framework it is argued that countries that for various reasons manage to raise their production capacity will also diversify and upgrade the composition of their export goods away from a narrow dependence on a few staple goods and towards more industrial goods.

On the other hand, in the Post-Keynesian tradition it is argued that export growth as an exogenous source of demand governs economic growth. According to this perspective the initial specialization of a country within the worldwide division of labour, largely dependent on its natural resource endowments, can be more or less conducive to the possibility of diversifying its productive forces into other sectors of the economy. It may be argued for example that Sweden's forestry-based industrial complex had more growth potential and also more linkages to other sectors of the economy than the types of agricultural goods that dominated exports in Australasia and the Rio de la Plata region. It may also be argued that the geographical proximity of the Nordic countries to the fast-growing industrial economies of Western Europe was clearly beneficial to them compared with the other two regions. However, among Post-Keynesian economists it is also widely recognized that differing growth rates are not simply a passive reflection of external demand growth. Of importance is the capacity of a country to adapt its productive forces to changing composition of demand in the world market. Otherwise, it would for example be difficult to explain the diverging growth experiences of Australasia and the Rio de la Plata region in the twentieth century. Countries differed not only in their resource endowments but also in their institutional framework, economic and industrial policies, education, etc. The institutional framework is also related to foreign trade policies. No doubt, particularly since the 1930s, tariffs affected commodity trade in different ways in different regions. Their impact was more important in Southern societies, and particularly in those of the Rio de la Plata.

For a more complete understanding of economic growth, comparative research should be deepened in these areas.

Appendix: Sources for Data

Australia: GDP and GDP deflator Butlin et al. (2014), Export and import volumes, http://dfat.gov.au/trade/resources/trade-statistics/Pages/trade-time-series-data.aspx;
Export and import prices, http://dfat.gov.au/trade/resources/trade-statistics/Pages/trade-time-series-data.aspx
(Bambrick, 1970; Butlin et al., 2014; Wilson, 1931).
New Zealand: GDP and GDP deflator: http://www.stats.govt.nz/browse_for_stats/economic_indicators/nationalaccounts/long-term-data-series.aspx, table E1.1
Rankin (1992)
Export and import volumes, export and import prices
http://www.stats.govt.nz/browse_for_stats/economic_indicators/nationalaccounts/long-term-data-series.aspx
Briggs (2003)
Argentina: Ferreres (2010)
Uruguay: GDP and GDP deflator, Bértola (2016)
Exports and imports (nominal and real) Baptista & Bértola (1999) and Bértola (1990).
Moxlad database, http://moxlad-staging.herokuapp.com/home/es
Sweden: GDP nominal and real. Edvinsson (2014)
Exports and imports, nominal Edvinsson (2014)
Export and import price indexes.
1870–1913, own calculations.
1913–1970, Johansson (1967), Edvinsson (2014)
Denmark: GDP nominal and real Hansen (1974)
Exports and imports, current values.
1870–74, Hansen (1974)
1874–1970, Bjerke and Ussing (1958), Johansen (1985)
Export and import prices.
Hansen (1974), Ølgaard (1966: 243), Johansen (1985)
Norway: GDP nominal and real Grytten (2003)
http://www.norges-bank.no/en/statistics/historical-monetary-statistics/
Exports and imports (nominal and real) Grytten (2003)
http://www.norges-bank.no/en/statistics/historical-monetary-statistics/
Finland: http://www.stat.fi/til/vtp/tau_en.html
Hjerppe (1989)

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