Resolving the Halperín Paradox: The Terms of Trade and Argentina’s Expansion in the Long Nineteenth Century

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Abstract

Since the pioneering work of Tulio Halperín Donghi, historians have tried to explain why Argentina experienced a dramatic pastoral expansion in the first half of the nineteenth century even though there were no price incentives for increasing output. Here this ‘Halperín paradox’ is resolved by correcting the methodological error that underlies it. Halperín Donghi made the mistake of looking at the nominal prices of Argentina’s exports in Britain, whereas he should have looked at their prices in Argentina deflated by the prices of the country’s imports – that is, its terms of trade. When this methodological error is corrected, a massive terms-of-trade boom can be seen from the 1780s through to the First World War. It is likely that Argentina’s terms of trade improved by at least 2,000 percent over this period, so there were considerable price incentives for the expansion on the Pampas. With the Halperín paradox resolved, future research should look less at the Pampean zone and more at the effects of the terms-of-trade boom on the relatively land-scarce regions of the Interior.

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Resolving the Halperín Paradox:
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Joseph A. Francis

This paper demonstrates that there was a massive improvement in Argentina’s terms of trade from independence up to the First World War. In doing so, it corrects a major methodological error in the existing literature. Historians have previously tended to look at absolute rather than relative prices, often drawing them, moreover, from the core countries, rather than from Argentina itself. This paper argues that this methodological error is at the heart of what can be called the ‘Halperín paradox’ – that is, the question of why Argentina’s expanded so dramatically in the long nineteenth century despite a lack of price incentives. Here it is demonstrated that once Argentina’s terms of trade are correctly measured, this apparent paradox is resolved, as there were actually clear price incentives for the expansion.

Tulio Halperín Donghi first noted the paradox in two influential essays on Argentina’s pastoral expansion in the first half of the nineteenth century. Examining the nominal prices of River Plate hides and tallow in Britain, he found that they rose somewhat after independence in 1810, but then experienced a ‘slow but very prolonged fall’ from the mid-1830s onwards, precisely as exports from Buenos Aires took off. This led Halperín Donghi to conclude that the pastoral expansion was not due to price incentives because, as he put it, his numbers ‘perfectly demonstrate the economic climate in which pastoral production occurred in the whole River Plate area (and, for that reason, also in the countryside of Buenos Aires); [it was] a production that did not receive its stimulus, nor see its momentum hampered, by movements in prices’.

Following Halperín Donghi, historians have attempted to explain why Argentina’s expansion occurred despite falling prices. In the words of one major survey, the problem became to ‘explain the paradox posited by Halperín

Donghi more than thirty years ago: the great boom in the ranching economy was achieved during a time of declining export prices. Halperin Donghi himself concluded that it occurred because Argentine capitalists were pushed out of commerce by the arrival of British merchants, so they instead invested in pastoral activities. The problem with this explanation is that there was no British monopoly of commerce, and both creole and Spanish merchants remained heavily involved in trade long after independence. As an alternative, Samuel Amaral suggested that the expansion was due to the rise of the estancia, which was a particularly efficient way of organising pastoral production. Alejandro Irigoin then suggested that the expansion also occurred because merchants began to invest in land as a hedge against civil war-induced inflation.

Such explanations become unnecessary once the terms of trade are examined. To be clear, what are being referred to are technically known as the ‘net barter terms of trade’ (NBTT), which are the ratio of a country’s export price index (Px) to its import price index (Pm). They are, then, calculated as:

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NBTT = \frac{Px}{Pm}
\]

When this ratio goes up, the terms of trade are improving; when it goes down, they are deteriorating.

This paper’s main finding is that Argentina’s terms of trade improved massively over the course of the long nineteenth century. Even those scholars who have previously observed an improvement have failed to recognise the magnitude of the terms-of-trade boom because they have used prices from the core countries as proxies for prices in Argentina itself. In doing so, they have introduced a major downward bias into the trend of their estimates due to the substantial convergence that occurred between prices in Argentina and the core

during the nineteenth century. This paper partially corrects that bias by using prices from Argentina itself for exports, resulting in what can be called ‘part-proxy’ estimates of its terms of trade. With some adjustments made for price convergence on the import side, they suggest an improvement of at least 2,000 percent from the 1780s through to the first decade of the twentieth century. There were, then, massive price incentives for the expansion on the Pampas.

To begin, the paper explains why the terms of trade were depressed in the late colonial period and why they improved following independence. Just how much Argentina’s terms of trade improved during the nineteenth century is demonstrated using newly compiled series for the country’s export prices, combined with the export prices of its trade partners as a proxy for its import prices. How the long terms-of-trade boom triggered expansion on the Pampas is then outlined. By way of a conclusion, it is argued that – with the Halperín paradox resolved – future research should focus less on the Pampean zone and more on the negative impacts of the boom on the country’s more densely populated Interior regions.

Opening Doors

Under the Spanish empire the River Plate’s terms of trade had been depressed by Spanish merchants’ monopoly of trade with the American colonies. The logic of this monopoly has often been misunderstood, as historians have assumed that it was intended to promote the peninsula’s own development. In establishing the monopoly, however, the crown’s principal goal was to finance its own war-making, rather than to provide markets for Spanish industry. Much of the crown’s revenues came from taxing American exports and imports when they passed through Spain, while it also extracted a disproportionate amount of its domestic tax from Cádiz, the region of Spain that benefited most from the Indies trade. The trade monopoly was thus intended to generate flows of


11. In this, it suggests the research agenda implied by J.G. Williamson, ‘Globalization and the Great Divergence: Terms of Trade Booms, Volatility and the Poor Periphery, 1782-1913’, European Review of Economic History, 12:3, 2008; and idem, Trade and Poverty: When the Third World Fell Behind, Cambridge, MA, 2011, ch. 3. It should be noted that while Williamson’s narrative is convincing, there are major problems with the empirical data he uses to support it. See Francis, ‘Periphery’s Terms of Trade’.


13. See J.A. Barbier and H.S. Klein, ‘Revolutionary Wars and Public Finance: The Madrid Treas-
goods and bullion through Spain that could be taxed by the crown.\textsuperscript{14}

In the River Plate the colonial order was primarily concerned with ensuring that the silver from Upper Peru’s mines flowed back to Spain. All goods legally imported from Europe had to be shipped from Seville (or, later, Cádiz) to the Isthmus of Panama, carried across land to the Pacific, shipped to Callao, Lima’s Pacific port, then taken 4,000 kilometres overland in mule trains to the River Plate. Such a lengthy journey brought high trade costs, which inflated the prices of imports, thereby providing a considerable degree of protection for the ‘proto-industry’ of the Andean peasant societies. In the River Plate’s Littoral region, Buenos Aires developed as an entrepôt for a flourishing contraband trade, with imports of African slaves, European manufactures, and tropical goods from Brazil illicitly exchanged for silver from Upper Peru.\textsuperscript{15}

For the River Plate’s pastoral producers, depressed terms of trade were a side effect of the Spanish trade monopoly. The monopoly generated great price differentials between Europe and the Americas due to the high trade costs that it entailed. Even following some trade liberalisation in the late eighteenth century, competition among Spanish merchants in Buenos Aires remained minimal, so their markups were high.\textsuperscript{16} Their shipping, moreover, was inefficient, and their goods were heavily taxed – in both Spain and Buenos Aires – by the Spanish authorities.\textsuperscript{17} Consequently, export prices were depressed and

\textsuperscript{14.} The failure to recognise the fiscal role of the trade monopoly has led to some bizarre interpretations of the political economy of the Spanish empire. Grafe and Irigoin, for example, have interpreted the fiscal transfers from treasuries in mining regions to the treasuries of ports as evidence that the Spanish empire ‘successfully aimed at making the colonies self-sufficient, with intra-colonial transfers covering the needs of regions that either could not or would not raise sufficient revenue’. R. Grafe and M.A. Irigoin, ‘The Spanish Empire and Its Legacy: Fiscal Redistribution and Political Conflict in Colonial and Post-Colonial Spanish America’, Journal of Global History, 1:2, 2006, p. 263. Chanelling silver to the ports was, however, merely intended to ensure that it flowed back to Spain in exchange for imported European goods.


\textsuperscript{16.} Socolow suggests that 70 percent was considered an ‘acceptable markup’. S.M. Socolow, The Merchants of Buenos Aires, 1778-1810, Cambridge, 1978, p. 60.
import prices inflated. Thus, in the first half of the 1790s cattle hides sold in Buenos Aires for as little as 20 percent of their wholesale price in Cádiz.\textsuperscript{18} Ranchers accordingly tended to be impoverished, with most illiterate and many lacking basic goods, such as shoes and socks.\textsuperscript{19} Merchants and bureaucrats instead formed the dominant class.\textsuperscript{20}

The colonial order began to disintegrate following the British invasions of 1806 and 1807. Even though the British forces were repelled from Buenos Aires on both occasions, the province’s ranchers soon heard of the greatly improved terms of trade that the British merchants were offering in Montevideo, the city across the River Plate estuary that had been successfully occupied. The ranchers therefore lobbied the Spanish authorities to liberalise trade. Mariano Moreno, a prominent young lawyer, famously appealed to the Spanish viceroy on the ranchers’ behalf.\textsuperscript{21} He noted that in Montevideo ‘[s]ales were made at advantageous prices, goods were bought at minimal values, and the rural world wore fabrics that it had never known before, having sold at high values hides that its grandparents had thrown away as useless’.\textsuperscript{22} The ranchers and their representatives recognised, then, that across the River Plate the terms of trade had improved dramatically under the British, so they sought the end of the Spanish trade monopoly, through independence if necessary.\textsuperscript{23}

The disintegration of the empire brought Spain’s trade monopoly to an end. Already in November 1809 the Spanish viceroy had been persuaded to allow two British merchants to disembark and sell their cargoes.\textsuperscript{24} Then, three days after an independent government was declared in late May 1810, the remaining restrictions on trade with foreigners were removed.\textsuperscript{25} Subsequently, the number of merchants arriving rose: whereas 50 ships had docked annually

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17. Many goods imported from Spain came from other parts of Europe, so they were taxed when they entered Spain, taxed again when they were reexported, then taxed again upon arrival in Buenos Aires. The River Plate’s exports would pay the same taxes, although in the opposite order. Newland and Ortiz, ‘Economic Consequences’, pp. 276-78.
22. D.M. Moreno, Representación que el apoderado de los hacendados de las campañas del Río de la Plata, Buenos Aires, (1809) 1874, p. 29, my translation.
23. As Adelman has stressed, independence in itself was not necessarily the goal of revolutionaries such as Moreno. Rather, they sought trade liberalisation so that the country would be able to exploit its land resources. J. Adelman, Republic of Capital: Buenos Aires and the Legal Transformation of the Atlantic World, Stanford, 1999, ch. 3.
at Buenos Aires in the mid-1790s, there were over 250 foreign merchant vessels entering by the early 1820s. Crucially, this dramatic increase in overseas trade became the new basis for state finance in Buenos Aires, as import taxes replaced fiscal transfers from Upper Peru as the main source of government revenues. This ensured that all post-independence governments would be committed to promoting trade.

Increased competition among merchants turned Buenos Aires into more of a sellers’ market for pastoral producers and a buyer’s market for consumers of imported goods. Furthermore, export duties were lowered considerably, British and other foreign shipping was more efficient than Spanish vessels, and merchants were no longer obliged to ship their goods via Spain. As trade costs fell, there was rapid price convergence: in the first half of the 1790s hides had sold in Buenos Aires for around 20 percent of their ‘in bond’ price in Britain, but they were selling for 80-90 percent by the 1820s. Prices are not available for imports, but it is likely that a similar convergence took place. Hence, in the early 1820s, a resident British merchant complained that he had ‘bought English stockings cheaper than I could buy them in London’, and that it was ‘cheaper to purchase a stock of linen [in Buenos Aires] than at home’.

29. Within two weeks of independence, export taxes would be lowered (Buenos Ayres, Gazeta, 1, 1810, p. 6), and they would then be further eroded by inflation, falling to just four percent on dry ox hides by the end of the 1820s. Calculated from J. Broide, ‘La evolución de los precios pecuarios argentinos en el periodo 1830-1850’, mimeo, 1951, p. 41, Cuadro 16; also published in Revista de la Facultad de Ciencias Económicas, 4:32; and M.A. Irigoin, ‘Finance, Politics and Economics in Buenos Aires, 1820s-1860s: The Political Economy of Currency Stabilisation’, PhD diss., University of London, 2000, p. 126, Table II.1.6. Export taxes were eroded by inflation because, from 1822 onward, they were in fixed paper money amounts that were only sporadically adjusted for rising prices. See ibid., pp. 129-30.
31. An Englishman, A Five Years Residence in Buenos Ayres During the Years 1820 to 1825, 2nd ed.,
Argentina’s terms of trade had been depressed, then, by the colonial order, but they appear to have improved dramatically following independence. Initially this was due to the abolition of the Spanish trade monopoly, as has been outlined here, but subsequently it was thanks to the industrial and transport revolutions. In the North Atlantic core mechanisation combined with the competitive organisation of industry to lower the prices of the manufactured goods that Argentina imported, while more efficient shipping, better packaging, and faster flows of information radically reduced trade costs, which raised export prices and lowered import prices across the periphery.\textsuperscript{32}

Measuring the Boom

Up to now, historians have not realised the magnitude of Argentina’s nineteenth-century terms-of-trade boom due to two methodological errors. Firstly, they have often not looked at Argentina’s terms of trade at all, preferring instead to simply examine the nominal prices of its exports.\textsuperscript{33} Secondly, given the work entailed in piecing together Argentina’s fragmentary price record, even those who have looked at the terms of trade have relied upon prices from core countries as proxies for prices in Argentina itself.\textsuperscript{34} While commonly used by historians of peripheral countries, such ‘proxy’ estimates of the terms of trade are liable to have a major downward bias in the trend for the nineteenth century due to the considerable price convergence that took place between the North Atlantic core and the periphery.\textsuperscript{35} For Argentina, proxy estimates have implied an improvement in the terms of trade of around 150 percent from 1810 to 1913.\textsuperscript{36} Nonetheless, a careful reconstruction of the existing price record suggests that this is a major underestimate.

Figure 1 provides an initial illustration of Argentina’s terms-of-trade boom. It shows the domestic wholesale prices of nine of the country’s main

\begin{itemize}
\item London, 1827, p. 93.
\item See Newland, ‘Exports and Terms of Trade’; and Llorca-Jaña, \textit{British Textile Trade}, p. 195, Figure 7.4.
\item Francis, ‘Periphery’s Terms of Trade’.
\end{itemize}
Figure 1
Part-Proxy Terms of Trade for Nine Argentine Exports, 1780-1913

- Hides, dried (1780+)
- Hides, salted (1821+)
- Jerked beef (1829+)
- Tallow (1833+)
- Wool (1833+)
Figure 1 (cont.)

Part-Proxy Terms of Trade for Nine Argentine Exports, 1780-1913

*Also used as a proxy for chilled and frozen beef in the export price index.

Note: The wholesale price of each good in Buenos Aires was divided by a chained, geometric Laspeyres index of the export prices of Argentina’s major trade partners, then all series were referenced so that 1913 equalled 100. The trade partners included in the proxy import price index are Britain (from 1780), the United States (from 1790), France (from 1809), Brazil (from 1821), Italy (from 1862), and Germany (from 1880).

Sources: See the Appendix.
exports relative to a crude proxy import price index constructed from the export prices of six of Argentina’s major trade partners. These therefore represent ‘part-proxy’ terms of trade, in that they use Argentina’s own prices for its exports but depend upon prices from Argentina’s trade partners as proxies for its import prices. As such, they are still likely to have a downward bias in the trend due to the price convergence that took place during the nineteenth century. Nonetheless, they suggest a far greater terms-of-trade boom than is normally supposed.

When all the price series are indexed to make a single series of Argentina’s terms of trade, as in Figure 2, they show an improvement of around 1,500 percent from the 1780s to the 1900s. What is more, even this is likely to be an underestimate because the crude proxy import price index does not take into account the price convergence that took place on the import side. If adjustments are made for the effects of falling trade costs on import prices, it seems likely that the improvement would be more than 2,000 percent over the same period. Assuming, for instance, that the differential of import prices in Argentina to export prices in the core fell from 100 percent in the 1780s to 20 percent in the

37. On this problem in such ‘part-proxy’ estimates of peripheral countries’ terms of trade, see Francis, ‘Periphery’s Terms of Trade’, pp. 13-15.
Volatility in Argentina’s Part-Proxy Terms of Trade, 1780-1913

(a) Annual % change

(b) % variation from trend

* The cyclical component as a percentage of the trend component. Both were calculated using a Hodrick-Prescott Filter, with the smoothing parameter set at 1,000.

Sources: Calculated from the series in Figure 2.

1900s, which is plausible, the terms of trade would have improved by 2,500 percent. Furthermore, the terms of trade also appear to have become increasingly stable, as indicated by the two measures of volatility shown in Figure 3. Panel (a) simply shows the annual percentage change in the series, while Panel (b) shows the cyclical component in the series as a percentage of its trend component. Both suggest decreasing volatility. The terms of trade thus appear to have improved persistently for over a century, while they also become less volatile. Here were the price incentives for the expansion on the Pampas.

Expansion on the Pampas

The Robertson brothers, two prominent Scottish merchants, provided a vivid account of how improved terms of trade triggered growth in Corrientes, a province in Argentina’s Littoral region, in the 1810s. When the Robertsonsons

38. See the Appendix.
39. Some caution should be exercised in interpreting the strong volatility during the 1810s because the source for the export price index for this period is based on hide prices that are given as several-year averages. Nonetheless, even if the 1810s are excluded from the picture, the impression of declining volatility remains.
40. J.P. Robertson and W.P. Robertson, Letters on South America: Comprising Travels on the Banks of the Paraná and Rio de la Plata, I, London, 1843, pp. 174-86. On the Robertsonsons, see Halperín Donghi, Politics, Economics, pp. 87-88; V.B. Reber, British Mercantile Houses in Buenos Aires,
arrived, they found that the province’s ranchers ‘paid high prices for their goods, and got low ones for their produce’—their terms of trade were, in other words, depressed. According to their own account, the Robertsons transformed that situation by reversing ‘the plan of the Old Spaniards: we gave high prices for hides, and took low ones for goods’. They described the result as follows:

[T]he country, as if by magic, started into industrious life and mercantile activity, in every section of its wide extent. Herds and flocks were gathered together, thousands and tens of thousands of the wild cattle were slaughtered for their hides; and in all directions the creaking of the large wheels of huge and ponderous wagons, laden with the produce of the estancias and villages, as they uninterruptedly traversed the country, gave token of renewed prosperity and peace, where a few months, nay a few weeks, before, all had been rapine, desolation, and decay.

Such optimism reflected the experience of the Littoral provinces, which were able to take advantage of the terms-of-trade boom due to the navigable rivers that connected them to the oceans, allowing them to export their pastoral products.

Buenos Aires, in particular, benefitted from improved terms of trade. Not only were there roughly 400,000 square kilometres of Pampas grasslands to its south and west, but the city’s strategic location on the River Plate estuary also allowed it to monopolise the customshouse revenues that came from taxing overseas trade. To increase its revenues, the Buenos Aires government encouraged the expansion of ranching. Land grants were made soon after independence to encourage ranchers to push Buenos Aires’ frontiers into Indian territory, and in the 1820s large tracts of Pampean land, which was mostly publicly owned, became available on 20-year, transferable leaseholds, most of which would later be converted to freehold titles in the 1830s. Merchants

41. Robertson and Robertson, Letters on South America, pp. 174-75
42. Ibid., pp. 176-77
43. Ibid., p. 179.
diversified into landownership in response to the shift in relative prices. Gradually, a new landowning class emerged, becoming the principal beneficiary of the dramatic export expansion that began in the 1840s. Cattle hides initially accounted for most of the growth, although jerked beef, other skins and hides, tallow, and increasingly wool also became important exports. Initially, these pastoral goods mainly went to Britain, but continental Europe and the United States subsequently became the major importers.

The arrival of the railways in the second half of the nineteenth century turned the pastoral expansion into an arable expansion that encompassed the whole of the Pampas. The customshouse revenues were used to subsidise foreign railway companies and to build publicly-owned lines, resulting in a new railway network that facilitated the final defeat of the Pampas Indians. Around 500,000 km² of Pampean land would then be incorporated into Argentina from the mid-1850s to the end of the 1880s. Buenos Aires Province itself increased from 89,000 km² in 1855 to 311,000 km² in 1890, while La Pampa was created as a new ‘national territory’ to incorporate 145,000 km² of the conquered land in the centre of the country. Reduced costs of overland transportation then allowed the land away from the rivers to be profitably cultivated for the first time. Figure 4 illustrates how a dramatic expansion in arable exports followed the arrival of the railways, as Argentina became one of the world’s major exporters of agricultural products. Improved terms of trade had in this way inspired a century-long expansion on the Pampas.

Progress and Decline

This paper has resolved the Halperín paradox. It has argued that much of the historiography of Argentina’s long nineteenth century has been misled by

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52. Estimated from Cortés Conde, *Progreso argentino*, p. 56, Table 2.1.
Halperín Donghi’s methodological error of looking at the nominal prices of Argentina’s exports in foreign markets as a proxy for prices in Argentina itself. Following Halperín Donghi, historians have attempted to explain why there was an expansion on the Pampas despite the lack of price incentives. By applying a better methodology, however, this paper has demonstrated that there were in fact clear price incentives for the expansion. Indeed, over the whole of the long nineteenth century – from the 1780s through to the 1900s – Argentina’s terms of trade probably improved by at least 2,000 percent. There were, then, massive price incentives for increasing output.

The progress that resulted from Argentina’s expansion has been much celebrated by some historians. It could be seen most clearly in the growth of territory, population, and trade. The federal government enlarged the territory

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54. Economic historians also point toward dramatic per capita GDP growth but their numbers are far from reliable. See J.A. Francis, ‘The Terms of Trade and the Rise of Argentina in the
under its control from around 1.9 million square kilometres at the end of the 1860s to 2.8 million by the eve of the First World War, while the land under cultivation increased from roughly 600,000 hectares at the beginning of the 1870s to 24 million in 1913. Immigrants provided much of the labour for this expansion, with about three million foreigners, mainly Italians and Spanish, settling from the 1860s through to the First World War, leading to a population growth of 3.3 percent per year – faster than any other major country. Export volume grew by approximately five percent annually.

Yet improved terms of trade were not entirely beneficial. Inequality tended to increase not only between landowners and the landless, but also between regions that were relatively land abundant and land scarce. While the Pampean zone prospered, much of the Interior, where approximately two thirds of the population lived at independence, was less fortunate. Prior to colonisation in the sixteenth century, the mountainous North and West had been populated by sedentary peasants, living on the southern periphery of the Incan empire. Spanish settlers had rapidly established themselves as overlords of these peasant societies, using Indian labour to supply Potosí, the great mining city in Upper Peru, with mules, sugar, wine, tobacco, and other goods. Crucially, they were protected from competition with imports by the high trade costs that resulted from the Spanish monopoly.

After independence, the Interior’s products struggled to compete with the cheaper imports arriving at the Littoral’s expanding market because the high costs of overland transportation made them uncompetitive. In 1825, for example, it was estimated that at a distance of 1,040 km the cost of transporting

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55. Estimated from Superintendente del Censo, Primer censo de la República Argentina, Buenos Aires, 1872, p. 672; and Comisión Nacional de Censo, Tercer censo nacional, III, Población, Buenos Aires, 1916, p. 58. It can be assumed that the indigenous-occupied ‘national territories’ were not under the federal government’s control when the 1869 census was taken.


61. This is an approximation and does not include the indigenous populations beyond the frontiers. From J. Comadrán Ruiz, Evolución demográfica argentina durante el periodo hispano: 1535-1810, Buenos Aires, 1969, p. 115.

62. P. Santos Martínez, Las industrias durante el Virreinato (1776-1810), Buenos Aires, 1969; and Halperín Donghi, Politics, Economics, pp. 6-16.
wine overland to Buenos Aires equalled half the price of wine in that city. For
distant wine-producing provinces such as Mendoza or San Juan, both around
1,000 km away from Buenos Aires, such high transportation costs meant that
their wines struggled to compete with imports in the Littoral’s market. The loss
of these markets then reduced profit margins, so vineyards were converted to
alfalfa, in order to feed the cattle that were being herded from the Pampas to
Chile.

Worse still, the Interior’s textile producers were vulnerable to imported
cloths, which could be profitably transported over land due to their light
weight. In the late colonial era, textile production was widespread among
peasant women, both for their own consumption and for sale in urban
markets. Hence, in 1788 the governor of Córdoba reported that:

Córdoba’s sheep are the principal respite of the poor people or those of middling
means because their wool is of a predictable quality, they employ it in blankets,
cloths, ponchos, throws, and rugs, with which they do a considerable trade to
Buenos Aires, Mendoza, Chile, Salta, and even Peru, and almost all the women of
the countryside dedicate themselves to these goods, which they generally ex-
change with merchants for Castilian goods, such as linens, cottons, velvets, silks,
etc. From sheep and goats skins they make very good rugs and cured leathers that
have their own circulation.

Following independence, the Interior’s textiles were first pushed out of the Litt-
oral’s market by cheaper imports; then their place in the Interior’s own markets
was gradually diminished as North Atlantic manufacturers began to adapt their
products to Argentine tastes. Only the still considerable costs of overland trans-
portation appear to have allowed the textile producers to continue, although it

118, Table 17. Conversion factor from leagues to kilometres from Tornquist, Economic Devel-
opment, p. 326.

64. B. Bragoni, ‘Condiciones y estímulos en la recuperación de una economía regional: Prácticas
mercantiles e instituciones empresarias en Mendoza, 1820-1880’, in M.A. Irigoin and R.
Schmit, eds., La desintegración de la economía colonial: Comercio y moneda en el interior del espacio
colonial (1800-1860), Buenos Aires, 2003, pp. 278-79. This analysis has been disputed by
Amaral, who argues that it was actually the civil wars that destroyed the West’s wine
industry after independence, rather than competition with foreign imports, and that it then
took decades for grape production to recover ‘because of its slower rhythms’. S. Amaral,
‘Free Trade and Regional Economies: San Juan and Mendoza, 1780-1820’, in Szuchman and
Brown, eds., Revolution and Restoration, p. 144. This argument is strange, however, because it
should not take decades to reestablish vineyards if the incentives are there.

65. Santos Martínez, Industrias durante el Virreinato, pp. 44-48; and C.S. Assadourian, El sistema
For a detailed case study, see E. Hermitte and H.S. Klein, ‘Crecimiento y estructura de una
comunidad provinciana de tejedores de ponchos: Belén, 1678-1869’, Documento de Trabajo
78, Centro de Investigaciones Sociales, Instituto Torcuato Di Tella, 1972.

66. Marques de Sobre Monte, ‘Sobre la Intendencia de Córdoba del Tucumán (1788)’, Revista de
Buenos Aires, 2:6, 1865, p. 483, my translation.
was in a considerably impoverished state.67

Textile producers all but disappeared completely when the railways brought the terms-of-trade boom to the Interior from the 1870s and ‘80s. In 1869 the first national census had found 94,882 textile producers,68 but their numbers fell to just 39,725 in 1895.69 To put these numbers in perspective, in 1869 textile producers represented 19 percent of the Interior’s workforce, whereas in 1895 they had fallen to 6 percent. The authors of the 1895 census report were unequivocal as to why this had occurred:

Until 1869, having no railways in the interior, and with high [internal] transportation costs, a great proportion of the population consumed [domestic textiles], which could rival the prices of similar goods from abroad: today, the competition due to the relatively low freight rates has made the consumption of domestic products fall, and therefore made redundant many of those who used to engage in this profession.70

By the 1914 census the number of textile workers recorded had fallen further to 30,980 people; in the Interior, they made up just 3 percent of the workforce.71 As in other parts of the periphery,72 this major ‘proto-industry’ had been under-


68. Including the census categories ‘blanqueadores’, ‘cordeleros, hiladores é hiladoras’, ‘tejedores y tejedoras’, ‘pelloneros’, ‘tintoreros’, and ‘torcedores de lana, seda, etc’. Calculated from Superintendente del Censo, Primer censo, pp. 642-669. This number is somewhat inflated because the 1869 census included child workers, whereas later censuses only included those aged 14 and over. A computer-coded sample of 100,944 individual returns from the 1869 census suggests that only 6 percent of textile workers were below 14 years old. Calculated from R. McCaa, M.R. Haines, and E.M. Mulhare, ‘Argentina: The First National Historical Censuses Microdata’, in P.K. Hall, R. McCaa, and G. Thorvaldsen, eds., Handbook of International Historical Microdata for Population Research, Minneapolis, 2000; underlying data available online at http://www.hist.umn.edu/~rmccaa/data/argentine_censuses_19thc.zip (accessed 1 September 2013). Applying that figure to the 1869 census data would suggest that there were 89,189 textile workers in that year.


70. Ibid., p. cxlv, my translation.

71. Including the census categories ‘cardadores de lana; cordeleros; fabricantes de tejidos; hiladores, tejedores, tellaristas; tintoreros’. Calculated from Comisión Nacional de Censo, Tercer censo, IV, Población, Buenos Aires, 1916, pp. 201-329.

72. Williamson, Trade and Poverty, esp. chs. 3-5. Again, for major caveats about Williamson’s
mined by improved terms of trade.

Unfortunately, research into these processes of decline has been inhibited by the Halperin paradox. Historians have focused on trying to explain why the expansion occurred on the Pampas despite the lack of price incentives, so the Interior has been largely overlooked. Nevertheless, as this paper has shown, once the terms of trade are measured correctly, considerable price incentives for the expansion on the Pampas can be seen. The Halperin paradox has in this way been resolved. What now needs to be further investigated is how the terms-of-trade boom impacted on the ‘other Argentina’.73 In other words, future research must look beyond Buenos Aires to the Interior, in order to explain not only Argentina’s progress in the long nineteenth century, but also its decline.

Appendix: Argentina’s Terms of Trade, 1780-1913
This appendix briefly describes how the new ‘part-proxy’ estimate of Argentina’s ‘net barter terms of trade’ (NBTT) was calculated.74 To begin with, some of the terminology will be clarified, then the sources and methods used for the new estimate will be discussed.

Ideally, a country’s terms of trade should be calculated using its own prices for both the export price index (Px) and the import price index (Pm). This can be done using wholesale prices from within the country, as follows:

\[
\text{Wholesale NBTT} = \frac{\text{Domestic wholesale } \text{Px}}{\text{Domestic wholesale } \text{Pm}}
\]

Alternatively, at-the-port prices can be used, which include wholesale markups and excise duties for export prices, but exclude customs taxes and wholesale markups for imports. Technically, these are known as ‘cost, insurance, and freight’ (CIF) import prices and ‘free on board’ (FOB) export prices. The at-the-port terms of trade are calculated in this way:

\[
\text{At-the-port NBTT} = \frac{\text{FOB } \text{Px}}{\text{CIF } \text{Pm}}
\]

Regrettably, such historical price data are often unavailable, particularly for poorer, more peripheral countries. As a result, historians have often used prices from Britain and the United States as proxies for prices in the peripheral

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74. The accompanying workbook is available online at http://www.joefrancis.info/data/Francis_Arg_tots.xlsx. For a longer account of its contents, see Francis, ‘Terms of Trade’, Appendix 4.1.
countries themselves. The results can be considered ‘proxy terms of trade’:

\[ Proxy \text{ NBTT} = \frac{Foreign \ P_x}{Foreign \ P_m} \]

Proxy terms-of-trade estimates are, then, those in which another country’s prices are used in place of a country’s own prices.

For the nineteenth century, such proxy estimates are problematic because of the price convergence that took place between core and peripheral countries. This meant, for example, that for much of the nineteenth century the price of Indonesian sugar fell in London, even as it rose in Java. Consequently, proxy terms of trade for Indonesia calculated using London prices have a significant downward bias in their trend. In the case of Indonesia, this can be demonstrated thanks to the scrupulous work of Dutch researchers in reconstructing the country’s price history. For no other peripheral country, however, has equivalent research been done, so historians have routinely relied upon proxy estimates. The terms-of-trade series presented for most other peripheral countries during the nineteenth century must consequently be treated with considerable scepticism, including those for Argentina.

75. See Francis, ‘Periphery’s Terms of Trade’, Appendix.
76. W.L. Korthals Altes, Changing Economy in Indonesia: A Selection of Statistical Source Material from the Early 19th Century up to 1940, XV, Prices (Non-Rice) 1814–1940, Amsterdam, 1994. For analysis of this data, see Francis, ‘Periphery’s Terms of Trade’, pp. 10-17.
78. The standard series for Argentina for 1811-70 comes from Newland, ‘Exports and Terms of Trade’, pp. 413-15; for the underlying data, see idem, ‘Puramente animal: Exportaciones y crecimiento en Argentina 1810-1870’, mimeo, 1990. Newland mainly used wholesale prices and unit values from the core countries. There is no canonical series for 1870-86, so the gap is filled by various means. Williamson, for example, relies on a series calculated using British commodity prices for exports and US wholesale price indices for imports. J.G. Williamson, ‘Globalization and the Great Divergence: Terms of Trade Booms, Volatility and the Poor Periphery, 1782-1913’, European Review of Economic History, 12:3, 2008, p. 390; also see C. Blattman, J. Hwang, and J.G. Williamson, ‘Winners and Losers in the Commodity Lottery: The Impact of Terms of Trade Growth and Volatility in the Periphery 1870-1939’, Journal of Development Economics, 82:1, 2007. For 1886-1913, an index originally calculated by Ford is the standard series. He used a mixture of prices from Argentine trade statistics and British wholesale prices that he corrected for changes in transportation costs. A.G. Ford, ‘Export Price Indices for the Argentine Republic, 1881-1914’, Inter-American Economic Affairs, 9:2, 1955. This correction procedure means that Ford’s estimates should be considerably more accurate than those of Newland or Williamson, although there are doubts about Argentina’s trade statistics for much of this period. See R. Cortés Conde, T. Halperin, and H. Gorostegui de Torres, ‘Evolución del comercio exterior argentino: Tomo I: Exportaciones: Parte primera 1864-1930’, mimeo, 1965. Moreover, the version of Ford’s index that has routinely been used is that presented by G. di Tella and M. Zymelman, Etapas del desarrollo,
The new terms-of-trade estimate for Argentina that is presented in Figure 2 of this paper is far from perfect. It can be considered a ‘part-proxy’ estimate, in that it uses Argentina’s own prices for exports but the prices of Argentina’s main trade partners for imports. It is calculated as:

\[
\text{Part-proxy NBTT} = \frac{\text{Domestic Px}}{\text{Foreign Pm}}
\]

It should be stressed that the terms-of-trade estimate for nineteenth-century Argentina that results from this formula is likely to have a downward bias in the trend because it does not take into account the price convergence that occurred on the import side.

Calculating Argentina’s export price index was a complicated task. The following sources were found for the raw price data: unit values for hides from Zacharias Moutoukias’ compilation of late colonial trade statistics for 1779-96;\(^{79}\) wholesale hide prices for 1810-23 from a report presented by British merchants to the new British consul in 1824.\(^{80}\) Julio Broide’s compilation of wholesale prices for 1829-51, as reported in the English-language British Packet and Argentine News,\(^{81}\) Juan Álvarez’ compilation of wholesale prices for the 1860s onwards, taken from the bulletin of the Buenos Aires Stock Exchange;\(^{82}\) Roberto Cortés Conde, Tulio Halperín Donghi, and Haydée Gorostegui de Torres’s unpublished reconstruction of Argentina’s export statistics from the 1860s to the early twentieth century, when market prices began to be used in the official trade statistics,\(^{83}\) and the official trade statistics from the early twentieth century onwards.\(^{84}\) The fragmentary price series compiled from these sources were then converted into British pound sterling,\(^{85}\) the era’s dominant currency, and metric

Las etapas del desarrollo económico argentino, Buenos Aires, 1973, p. 56, Table 10. Bizarrely, when attempting to chain two of Ford’s export price indices, di Tella and Zymelman did not ratio splice them; rather, they simply jumped from one series to another in 1892, resulting in an artificial increase. Unfortunately, other scholars have tended to use the di Tella and Zymelman version rather than Ford’s original. For example, see Ferrereres, Dos siglos, p. 658; and L. Arroyo Abad, ‘Persistent Inequality? Trade, Factor Endowments, and Inequality in Republican Latin America’, Economic History Review, 73:1, 2013, p. 71.

85. For 1780-1822, it was necessary to estimate the exchange rate based on the silver content of the peso and the price of silver in London. From Álvarez, Temas de historia, pp. 80-124; as
The various export price series were combined into a chained geometric Laspeyres index, which was used as a shorthand means to approximate a chained Fisher index. Ten separate subperiods were calculated; then they were spliced together using the geometric mean of their overlapping periods. The weights assigned to the 31 different goods in each subperiod can be seen in Appendix Table 1. They were assigned based on the values of goods exported in the indicated years, according to Argentina’s trade statistics. As can be seen, the number of goods included in the index increases over time: from 1780 to 1821 it includes dry hides only; in 1822 salted hides are added; in 1829 jerked beef; and so on. This reflects both the paucity of price data and the increasing variety of goods exported from Argentina.

The proxy import price index, by contrast, is considerably cruder. It is calculated from export price indices for six of Argentina’s major trade partners: Brazil, Britain, France, Germany, Italy, and the United States. With the exception of Brazil, the export price indices were taken from the work of other scholars, then converted to sterling. Again, they were combined into a


89. When a series was not available for part of a subperiod, these weights were adjusted accordingly.
90. Nine goods were included in Brazil’s export price index. They were reweighted every 10 years according to the value of their exports. Calculated from Instituto Brasileiro de Geografia e Estatística, Estatísticas históricas do Brasil: Séries econômicas demográficas e sociais de 1550 a 1988, 2nd ed., Rio de Janeiro, 1990, pp. 345-56.

The part-proxy terms of trade derived from these export and import price indices show a considerably greater improvement than has previously been supposed. In Appendix Table 3 that is confirmed by comparing the new series with that found in Orlando Ferreres’ commonly used compilation of Argentine historical statistics. Whereas Ferreres found a 152 percent improvement from 1810s to the 1900s, the new series suggests 441 percent. Moreover, if some adjustments are made to account for the falling trade costs for imports, the terms-of-trade boom appears even greater still. If it is assumed that high trade costs meant that Argentina’s import prices were 100 percent higher than the core’s export prices until independence in 1810, but then fell at a constant rate until they reached 20 percent of the core’s export prices in the first decade of the twentieth century, the improvement from the 1810s to the 1900s increases to 771 percent. Looking further back, the adjusted part-proxy estimate suggests an even greater boom, as it shows a 2,485 percent improvement from the 1780s to the 1900s, compared to 1,451 percent in the unadjusted estimate.

To test whether such a boom could feasibly have occurred, in Appendix Figure 1 the adjusted part-proxy estimate for Argentina is compared to Indonesia’s terms of trade, which, thanks to the work of the Dutch researchers mentioned above, is the only peripheral country to have a reliable own-price terms-of-trade estimate that reaches back to the first half of the nineteenth century.\footnote{Francis, ‘Periphery’s Terms of Trade’}. As can be seen, the improvement in the adjusted part-proxy estimate for Argentina is similar to that for Indonesia. This suggests that the magnitude of the terms-of-trade boom suggested for Argentina in this paper is highly plausible.
Appendix Figure 1

Terms of Trade for Argentina and Indonesia, 1780-1938

Sources:
Argentina: See the text.
Indonesia: Korthals Altes, Changing Economy, XV, pp. 158-60.
## Appendix Table 1

Weights in Argentina’s Export Price Index, 1780-1938

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<tr>
<td>Hides, dried (1780+)</td>
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<td>0.0779</td>
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<td>Flour (1880+)</td>
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<td>Linseed (1887+)</td>
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<td>Goat skins (1893+)</td>
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<td>Barley (1910+)</td>
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<td>Beef, frozen (1910+)</td>
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**Appendix Table 1 (cont.)**

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* Prior to 1910, the price of cattle is used as a proxy for the prices of chilled and frozen beef, which is reflected in the weight given to cattle until that year.

Note: The year after each good indicates the year in which a price series begins. When a weight of 0.0000 is given, it indicates that the product was included, but the weight given was less than 0.01 percent. The sum of the weights may not equal one due to rounding.

Sources:
The base year weights were calculated from the following sources:
### Appendix Table 2
Weights in Argentina’s Proxy Import Price Index, 1780-1938

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<td>0.0479</td>
<td>0.0778</td>
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<td>1930</td>
<td>0.0448</td>
<td>0.1105</td>
<td>0.2083</td>
<td>0.1608</td>
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<tr>
<td>Total</td>
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<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
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</table>

Note: The year after each good indicates the first year of its export price index. The sum of the weights may not equal one due to rounding.

Sources:

### Appendix Table 3
Three Estimates of Argentina’s Terms of Trade, 1780s-1900s

<table>
<thead>
<tr>
<th></th>
<th>Ferreres</th>
<th>New Part-proxy</th>
<th>Adj. part-proxy*</th>
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<td>1780s</td>
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<td>1810s</td>
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<th>Growth, %:</th>
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<td>1810s to 1900s</td>
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</table>

* Based on the assumption that Argentina’s import prices were 100 percent higher than the core’s export prices until 1810, but then fell exponentially to 20 percent in the 1900s.

Note: All three estimates were referenced so that 1900-09 equals 100.

Sources: Ferreres, *Dos siglos*, Table 8.1.7; and the text.
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