Development Strategy or Endogenous Process?

The Industrialization of Latin America

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This essay builds upon recent research by scholars across a broad number of disciplines to offer a reinterpretation of the history of Latin American industrialization. It departs from the standard view that underlies much of the Latin Americanist literature in political science, economics, and history: that Latin America had "open, primary product export economies" from the 1870s to the 1950s; that these export economies were then transformed into "import substituting industrial" economies during the period 1950-1980; that the mechanism that drove this dramatic transformation was an about face in economic policy making, from laissez faire to protectionism; and that this shift in "development strategy" was strongly influenced by the writings of Raul Prebisch and other economists at the United Nation's Economic Commission for Latin America in the 1950s.

The reinterpretation that I offer contains three arguments. First, there is no neat divide between a period of export-oriented growth and a period of import substituting industrialization. The development of large-scale, mechanized (and even "heavy") industry can be dated from the 1890s in the region's larger economies. Second, Latin American industrialization began as an endogenous outcome of the growth of the export sector, not the result of a rethinking of export-led development. Third, once industrialization got underway, governments enacted protectionist policies at the behest of manufacturers, but they did so in a haphazard manner, responding to specific political and economic problems as they were overtaken by them. The notion that Latin America embarked on a new "development strategy" influenced by Prebisch and ECLA in the 1950s is belied both by the fact that Latin America had been protectionist since the 1890s

and by the fact that the policies themselves—in the 1890s as well as in the 1950s and 1960s—were implemented in what can only be described as an ad hoc fashion.

The reinterpretation I offer has implications not only for economic history, but for a broad range of literatures in political science and economics. The notion that there are easily definable phases of Latin American development is an essential component of Cardoso and Faletto's theory of dependency, O'Donnell's theory of bureaucratic authoritarianism, and Haggard's comparative analysis of East Asian and Latin American development strategies.[1] Indeed, some of these accounts (O'Donnell being a case in point) not only posit a neat divide between primary product export economies and import substituting industrialization (ISI), but then go on to argue that there was a causal relationship between ISI and the collapse of democracy in the 1960s and 1970s. In short, the reinterpretation that I offer suggests that many of the standard interpretations of Latin American political economy are based on sets of stylized facts that are supported by little more than their frequent repetition.

This is not to argue that industry did not grow in the decades after 1950, nor is it to argue that the Latin American economies were not characterized by trade intensity in the decades before World War I. It is to argue, however, that industrialization did not spring fully grown and fully armored out of anyone's brow. It was the outcome of a long process that went back to the end of the nineteenth century. Indeed, governments

[1] Fernando Henrique Cardoso and Enzo Faletto, Dependencia y desarrollo en América Latina: Ensayos de interpretación sociológica (Mexico City: Siglo XXI Editores, 1969); Guillermo O'Donnell, Modernization and Bureaucratic-Authoritarianism: Studies in South American Politics (Berkeley: Institute for International Studies, University of California, 1979); Guillermo O'Donnell, Bureaucratic Authoritarianism: Argentina, 1966-73, in Comparative Perspective (Berkeley: University of California Press, 1988); Stephan Haggard, Pathways from the Periphery: The Politics of Growth in Newly Industrializing Countries (Ithaca: Cornell University Press, 1990).

followed policies designed to subsidize and protect industry in the decades after 1950 precisely because industrialists and industrial workers had been protected since the 1890s and therefore constituted effective protectionist lobbies.

Industrial Development Amidst Export-Led Growth, 1890-1930

There had been, at least since the mid-nineteenth century, precocious attempts at industrial development in a number of Latin American countries. Nevertheless, the available quantitative evidence indicates that whatever industry had been founded grew at a very modest pace. Per capita incomes were too low, and markets were too isolated by high transport costs, to support modern manufacturing.[2]

The pace of industrial growth accelerated rapidly in the 1890s. Circa 1914, the larger countries of the region—particularly Brazil, Mexico, Chile, and Argentina—boasted sizable manufacturing sectors, which produced a broad range of consumer non-durables (particularly beer, cigarettes, soap, matches, hats, paper, footwear, and cotton cloth). In some cases, domestic firms had also moved into the production of intermediate inputs (basic chemicals, glass bottles), construction goods (particularly cement, wood working, explosives, and bricks), and metal working, including the production of iron and steel structural shapes, steel rails, and the fabrication of agricultural implements and parts for railroad repair.

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[2] See, for example, Stanley Stein, The Brazilian Cotton Manufacture: Textile Enterprise in an Underdeveloped Area, 1850-1950 (Cambridge: Harvard University Press, 1957); Stephen Haber, "Assessing the Obstacles to Industrial Development: The Mexican Economy ," Journal of Latin American Studies, 24:1 (1992), pp. 1-32; Armando Razo and Stephen Haber, "The Rate of Growth of Productivity in Mexico, 1850-1933: Evidence from the Cotton Textile Industry," Journal of Latin American Studies, 30:3 (1998), pp. 481-517; Fernando Rocchi, "Building a Nation, Building a Market: Industrial Growth and the Domestic Economy in Turn-of-the-Century Argentina," Ph. D. Dissertation, University of California, Santa Barbara, 1997.

The impetus for industrial development came from the expansion of foreign trade. Driving the growth of foreign trade were two factors. The first was that most Latin American countries were on the silver standard, and silver fell in value relative to gold in the last two decades of the nineteenth century. Most Latin American countries therefore saw their currencies depreciate in real terms relative to the gold-backed currencies of the economies of the North Atlantic. As international trade theory would predict, real exchange rate depreciation resulted in the expansion of the tradables sectors at the expense of non-tradables. Second, the late nineteenth century also saw a dramatic decline in the international costs of transport, as steel-hulled steamships came to replace wood and sail.[3]

Real exchange rate depreciation and falling costs of maritime transport kick-started Latin American economic growth. Latin American countries could now produce and ship goods at a price low enough to be competitive in the United States and Western Europe. These exports included minerals (particularly copper and lead), industrial fibers (cotton, wool, jute, and sisal), staple agricultural goods (primarily beef and wheat), and non-staple agricultural commodities (the most important of which were coffee, bananas, and sugar). The result was a wave of foreign direct investment in precisely those sectors. In order for these investments to bear fruit, however, there had to be a means to move commodities from their point of production to the ports or, in the case of Mexico, to the U.S. border. Trade therefore gave rise to the construction of railroad networks (also

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[3] Kevin O'Rourke and Jeffrey Williamson, Globalization and History: The Evolution of a Nineteenth Century Atlantic Economy (Cambridge Mass: MIT Press, 1999).

financed by foreign investment) that crisscrossed Latin America, linking major cities and integrating markets.[4]

The growth of the export sector, the concomitant growth of railway networks, and implicit trade protection created by depreciating real exchange rates created the conditions conducive to industrial development. First, there came into existence a wage earning population of ranch hands, miners, plantation workers, stevedores, and railway men that generated considerable demand for consumer goods. Second, this growing population of working class consumers was not made up of isolated pockets of workers toiling away in enclaves: they were part of a national market that was linked by railways. In fact, as William Summerhill has shown for Brazil and Sandra Kuntz-Ficker has shown for Mexico, most of the commodities carried by Latin American railways were destined for domestic (not international) markets.[5] Third, the railroads themselves were consumers of manufactures, most particularly pig iron and steel ingots for railroad repair shops, and, in the Mexican case, steel rails and wheels. Finally, the growth of the export sector fueled the growth of urban centers, which created demand for construction goods such as cement, wood products, and iron and steel structural shapes.

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[4] William Summerhill, "Transport Improvements and Economic Growth in Brazil and Mexico," in Stephen Haber (ed.), How Latin America Fell Behind: Essays on the Economic Histories of Brazil and Mexico, 1800-1914 (Stanford: Stanford University Press, 1997), pp. 93-117; and Order Against Progress: Government, Foreign Investment, and Railroads in Brazil, 1854-1913 (Stanford: Stanford University Press, 2003); Sandra Kuntz Ficker, Empresa extranjera y mercado interno: el Ferrocarril Central Mexicano, 1880-1907 (Mexico City: El Colegio de México, 1995); Sandra Kuntz Ficker and Paolo Riguzzi eds., Ferrocarriles y vida económica en México, 1850-1950: del surgimiento tardío al decaimiento precoz (Mexico: Colegio Mexiquense, 1996); John H. Coatsworth, Growth Against Development: The Economic Impact of Railroads in Porfirian Mexico (Dekalb, Illinois: Northern Illinois University Press, 1981).

[5] William Summerhill, "Transport Improvements and Economic Growth in Brazil and Mexico," in Stephen Haber (ed.), How Latin America Fell Behind: Essays on the Economic Histories of Brazil and Mexico, 1800-1914 (Stanford: Stanford University Press, 1997), pp. 93-117; William Summerhill, Order Against Progress: Government, Foreign Investment, and Railroads in Brazil, 1854-1913 (Stanford: Stanford University Press, 2003), chap 6; Sandra Kuntz Ficker, Empresa extranjera y mercado interno: el Ferrocarril Central Mexicano, 1880-1907 (Mexico City: El Colegio de México, 1995).

Latin America's merchants, who earlier had been importing manufactured goods, quickly realized the potential created by growing markets and implicit trade protection. They soon began to erect textile mills, beer breweries, cigarette factories, soap works, and other manufacturing enterprises. The production of consumer goods, in turn, produced demand for intermediate inputs, such as glass bottles, paper, and basic chemicals. Almost immediately, Latin America's nascent industrialists began to pressure their governments for high tariffs on the final goods they produced (in order to further protect them from foreign competition) and for low or zero tariffs on the capital and intermediate goods they needed in order to ramp up production.

This process of industrial development as a consequence of the growth of the export sector has been most intensively studied in the case of Mexico. Prior to the 1880s Mexican manufacturing was hampered by low per capita incomes and by the lack of long distance transport. Beginning in the 1880s, and then accelerating in the 1890s, "export led growth" removed these obstacles to industrial development. As a consequence, industry expanded at a dramatic pace.[6]

A description of the rapid growth and transformation of the cotton textile industry gives a sense of the process. Circa 1888 the Mexican cotton textile industry was small, much of it still operated on water power, and was characterized by a slow rate of

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[6] For a detailed discussion, see Stephen Haber, Industry and Underdevelopment: The Industrialization of Mexico, 1890-1940 (Stanford: Stanford University Press, 1989); Stephen Haber, "Assessing the Obstacles to Industrial Development: The Mexican Economy ," Journal of Latin American Studies, 24:1 (1992), pp. 1-32; Mario Cerutti,, Burguesía, Capitales, e Industria en el Norte de México (Monterrey, Mexico: Universidad Autónoma de Nuevo León, 1992); Dawn Keremetsis, La industria textil mexicana en el Siglo XIX (Mexico City: Secretaría de Educación Pública, 1973); Carlos Marichal and Mario Cerutti eds., Historia de las grandes empresas en México, 1850-1930 (Mexico: Universidad Autónoma de Nuevo León and Fondo de Cultura Económica, 1997); Aurora Gómez Galvarriato, "The Impact of Revolution: Business and Labor in the Mexican Textile Industry, Orizaba, Veracruz, 1900-1930" (Ph.D. Dissertation, Harvard University, 1999).

productivity growth. In the next decade, the industry more than doubled in size. By 1911, the industry had grown an additional 50 percent. (See table 1) The quantitative expansion of the textile industry was accompanied by a qualitative change in the methods of production. Mexico's mills now employed high-velocity, electric-powered looms and spindles, which were a far cry from the old water, steam, horse, or human-powered machinery. The new enterprises also operated on a tremendous scale, employing hundreds of workers and thousands of machines. Indeed, Mexico's leading firms were not simply large relative to the small, Mexican market, they employed thousands of workers and were enormous even by U.S. standards. Indeed, as table 2 demonstrates, they had succeeded in pushing foreign produced textiles out of the market.

Equally dramatic transformations took place in other manufacturing industries. Mexico's first integrated steel mill (Fundidora Monterrey) was founded in 1900. Its American-designed blast furnace, Bessemer converters, and rolling mills allowed it to rapidly establish a domestic monopoly in the production of structural shapes, rails, and other products. (See Table 3). In the paper industry, one giant, vertically-integrated firm brought in high speed, Swiss-made machinery with a capacity three times that of all its competitors combined, bought out its actual and potential rivals, and established a national monopoly in the market for newsprint and other low value-to-bulk paper products. In the cigarette industry, two giant firms, employing automated cigarette rolling machines and thousands of workers, pushed out the hundreds of artisan shops that had characterized the tobacco industry, controlling over 60 percent of the market by 1910. A sense of how quickly the industry consolidated can be seen in table 4. From 1899 to 1911, output doubled, while the number of firms fell by half. In beer brewing, a

domestic industry was created almost overnight, with local monopolies established in virtually every major city by the turn of the century. These breweries forced imported beer from the market, as can be seen in table 5. One of the industry's leading firms (the Cervecería Cuauhtémoc) soon spun off a glass bottle making company (Vidriera Monterrey) that quickly established itself as a domestic glass monopoly that persisted until the 1990s. A similar situation developed in the cement industry. Until the turn of the century, Mexico produced no cement at all. As table 6 shows, by 1911, there were three firms in operation with a combined capacity of 150,000 metric tons per year. In soap and glycerin, Mexico's hundreds of artisan producers were forced out of business by the Compañía Industrial Jabonera de la Laguna—one of the four largest soap factories in the world. La Laguna later turned its expertise in basic chemicals toward the establishment of a spin-off firm, the Compañía Nacional Mexicana de Dinamita y Explosivos, which monopolized the production and distribution of dynamite.[7] A similar process took place in shoe and boot manufacturing, where large scale factories (particularly those of United Shoe and Leather) began to replace the artisan shops that had dominated leather working in the 19th century.

Brazil underwent a very similar process of industrial development during the period 1890-1914. As was the case in Mexico, the development of industry was strongly linked to the growth of the export sector. In fact, the areas that industrialized the first and the fastest were exactly those that were most clearly tied to the so-called export economy—namely the coffee growing states of Sao Paulo, Rio de Janeiro, and Minas

[7] Stephen Haber, Armando Razo, and Noel Maurer, The Politics of Property Rights: Political Instability, Credible Commitments, and Economic Growth in Mexico, 1876-1929 (Cambridge University Press, 2003), chapter five.

Gerais. As was also the case in Mexico, Brazil's railroads, which putatively were created in order to move exports to ports, actually played a major role in integrating markets, thereby allowing domestic manufacturing firms to take advantage of economies of scale in production. The end result was that Brazil industrialized at a rapid pace in the two decades prior to World War One.

Brazil's early industrial development was strongly weighted toward the production of consumer non-durables. Cotton textiles, wool textiles, leather working, hat-making, paper making, and beer brewing all grew rapidly at the turn of the century. The available estimates indicate that on the eve of World War I, domestic production of consumer goods accounted for 80 percent of total domestic consumption.[8] This is not to say, however, that these consumer goods industries were not soon followed by intermediate goods producers, particularly jute sack manufacturing (an adjunct to the coffee industry) wheat milling, and glass bottle blowing. There were also some capital goods producers, including shipbuilding and machinery industries of modest scale. These metal working industries required, of course, a source of pig iron and steel ingots. Thus, beginning in the late 1880s, Brazilian foundries started to import modern blast furnaces, so that by 1900, Brazil was already producing some 2,000 tons of pig iron per year, which increased roughly seven-fold by 1914.[9]

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[8] Bill Albert, South America and the First World War : The Impact of the War on Brazil, Argentina, Peru, and Chile (New York: Cambridge University Press, 1988), p. 186.

[9] Bill Albert, South America and the First World War : The Impact of the War on Brazil, Argentina, Peru, and Chile (New York: Cambridge University Press, 1988), p. 186. For a discussion of individual industries, see Wilson Suzigan, Indústria Brasileira: Origem e Desenvolvimento (Editora Brasiliense, 1986), pp. 108-115; Werner Baer, The Development of the Brazilian Steel Industry (Nashville, Tenn: Vanderbilt University Press, 1969); Stanley Stein, The Brazilian Cotton Manufacture: Textile Enterprise in an Underdeveloped Area, 1850-1950 (Cambridge: Harvard University Press, 1957); Nathaniel H. Leff, The Brazilian Capital Goods Industry, 1929-1964 (Cambridge, Mass., Harvard University Press, 1968); Warren Dean, The Industrialization of Sao Paulo, 1880-1945 (Austin: University of Texas Press, 1969).

Brazil's largest industry, and its most intensively studied, was cotton textile manufacturing. Circa 1890 Brazil had a miniscule textile industry, small in size even by the standards of Mexico. By 1905, it had the largest cotton textile industry in Latin America. Its textile industry continued to grow at a dramatic clip to 1914, when it was roughly double the size of Mexico's textile industry. (See table 1). Nevertheless, in both the Mexican and the Brazilian cases, the domestic cotton textile industries had pushed aside imported cloth, with the exception of the market for finely woven products.

Argentina underwent a similar process of industrial development during the period 1890-1914. The expansion of the export economy and the construction of railroads created a growing market for all manner of consumer goods. Local entrepreneurs (many of whom began as merchants) quickly erected manufacturing plants to satisfy that growing demand.

One of the myths of early Argentine industrialization is that, with the exception of meat-packing, firms were of very small size, and resembled artisan shops more than modern factories. Like most myths, this one has *some basis* in fact. First, there is no doubt that Argentina had a very large and concentrated meat packing industry. Second, it is also true that the *average size* of Argentine manufacturing firms circa 1913 was less than 8 workers. (See Table 7).

The problem with this view, however, is that the average size of firms is a very misleading measure of industrial development or of the presence of large firms in the process of industrialization. In 1964, for example, 40 percent of Argentina's manufacturing workers were employed by firms of more than 200 workers. These large

firms accounted for only 0.6 percent of all firms, and they produced 42 percent of all output. Obviously, large-scale firms played a major role in Argentine industry. The average size of manufacturing firms, however, was only 7.2 workers—a lower number than in 1913. (See Table 7). What was true in 1964 was also true at the turn of the century. The average firm was of very small size, but that does not mean that a large proportion of industrial production did not take place in large, mechanized, and modern factories. As Fernando Rocchi and Yovanna Pineda have demonstrated, large scale factories characterized the beer, glass, tobacco products, soap, chemical, footwear, match, paper, wool textile, cotton hosiery, cement, hat, food-processing, and metal-working industries.[10] In short, Argentine manufacturing looked a lot like manufacturing in Mexico and Brazil: industries that could not take advantage of economies of scale in production or distribution were made up of hundreds of very small workshops; while industries that could take advantage of economies of scale were characterized by a small number of extremely large firms.

The Argentine beer industry provides an example of the rapid growth of large-scale manufacturing. Rising incomes, increasing population, and market integration during the so-called period of export-led growth produced a dramatic increase in the demand for beer. Beer consumption grew eight-fold from 13 to 109 million liters between 1891 and 1913. Two giant firms, Quilmes and Biekert, each producing tens of

[10] Fernando Rocchi, "Building a Nation, Building a Market: Industrial Growth and the Domestic Economy in Turn-of-the-Century Argentina," Ph. D. Dissertation, University of California, Santa Barbara, 1997), pp. 40, 86, 95, 100, 108, 109, 113, 119; Paul H. Lewis, The Crisis of Argentine Capitalism (Chapel Hill: University of North Carolina Press, 1990), pp. 298-99; Yovanna Pineda, "The Firm in Early Argentine Industrialization, 1890-1930: A Study of Fifty-Five Joint Stock Companies' Owners, Finance Sources, Productivity, and Profits." Ph.D. Dissertation, University of California Los Angeles, 2002.

millions of liters of beer annually, quickly emerged and dominated the industry. Circa 1911, these two firms accounted for 67 percent of domestic beer production.[11]

A similar process occurred in the cigarette industry. Cigarettes had traditionally been rolled by hand in artisan workshops or non-mechanized factories, and were of irregular quality. The dramatic expansion of the Argentine economy during the late 1880s and early 1890s increased the demand for cigarettes, thereby allowing firms to adopt technologies that permitted them to capture scale economies. As early as 1889 the first Bonsack automatic cigarette rolling machine was introduced. The spread of mechanized technology quickly drove small firms out of business. Within a decade, cigarette production was concentrated in a single conglomerate, the Compañía Nacional de Tobacos, which employed 2,800 workers and had a capacity of 400,000 cigarettes per day.[12]

Argentina did not develop a cotton textile industry of the size and complexity of those found in Brazil and Mexico. With a few notable exceptions, such as the giant Compañía Dell'Acqua (which produced 1.5 million meters of cloth per year), most cotton factories in Argentina imported yarn which they then knit into hosiery. Argentina's cotton knitwear factories, however, operated on a tremendous scale. The rapid expansion of the industry can be seen by the dramatic increase in the volume of yarn imported,

[11] Fernando Rocchi, "Building a Nation, Building a Market: Industrial Growth and the Domestic Economy in Turn-of-the-Century Argentina," Ph. D. Dissertation, University of California, Santa Barbara, 1997), pp. 40, 144, 412.

[12] Fernando Rocchi, "Building a Nation, Building a Market: Industrial Growth and the Domestic Economy in Turn-of-the-Century Argentina," (Ph. D. Dissertation, University of California, Santa Barbara, 1997), pp. 43-44, 87, 113; Yovanna Pineda, "The Firm in Early Argentine Industrialization, 1890-1930: A Study of Fifty-Five Joint Stock Companies' Owners, Finance Sources, Productivity, and Profits" (Ph.D. Dissertation, University of California Los Angeles, 2002), pp. 46-48.

which grew 16-fold between 1893 and 1904, from 298,392 kilos to 4,759,000 kilos. Circa 1908, domestic production of all cotton goods was valued at 17 million pesos, 22 percent of total consumption.[13]

Overall, the growth of Argentine industry during the belle époque was dramatic. Circa 1869 Argentina had virtually no manufacturing industry to speak of. By 1895, it had 24,114 firms employing almost 175,000 workers. By 1913, the number of firms had doubled (to 48,779), the number of workers had grown by 135 percent (to 410,221), and the value of total fixed capital quintupled (to 1.8 billion pesos).[14] (See Table 2). By this point, Argentine not only boasted a wide range of consumer goods industries, but also had a number of intermediate goods manufacturers, most particularly glass, cement, and metal working. As a consequence, Argentina manufacturers began to push foreign made products out of the market. As table 8 shows, domestic producers accounted for 90 percent of food, beverages, and tobacco output, 75 percent of paper and cardboard, 61 percent of wood products, 55 percent of chemicals, and 45 percent of textiles and clothing from 1900 to 1904.

Chile underwent a similar process of industrial development. As Muñoz Gomá and Kirsch have demonstrated, by 1914 much of Chilean industry was characterized by large-scale producers employing mechanized techniques of production.[15] In fact, Chile

[13] Fernando Rocchi, "Building a Nation, Building a Market: Industrial Growth and the Domestic Economy in Turn-of-the-Century Argentina," (Ph. D. Dissertation, University of California, Santa Barbara, 1997), pp. 50, 57, 95; Yovanna Pineda, "The Firm in Early Argentine Industrialization, 1890-1930: A Study of Fifty-Five Joint Stock Companies' Owners, Finance Sources, Productivity, and Profits" (Ph.D. Dissertation, University of California Los Angeles, 2002), p. 15.
[14] Paul H. Lewis, The Crisis of Argentine Capitalism (Chapel Hill: University of North Carolina Press, 1990), p. 31.
[15] Henry Kirsch, Industrial Development in a Traditional Society: The Conflict of Entrepreneurship and Modernization in Chile (Gainesville: University Press of Florida, 1977); Oscar Muñoz Gomá, Crecimiento industrial de Chile, 1914-1965 (Santiago: Universidad de Chile, 1968).

had a nascent capital goods industry that was tied, in particular, to the production of railway cars. The same firm that pioneered this industry later moved on to shipbuilding and other metal working industries. In addition, Chile had roughly the same mix of consumer goods industries found in Argentina: beer, shoes, paper, and cigarettes. It also produced some intermediate goods (basic chemicals, glass) and construction goods. Indeed, it had a large and thriving cement industry.[16]

Latin American industry circa 1890-1914 may have been modern in the sense that it used mechanized production technologies and in the sense that it operated on a tremendous scale. It was not modern, however, in the sense that it could compete effectively against producers in the United States and Great Britain. This had two ramifications. First, it meant that, with the exception of Argentine meat packing and wool washing, virtually none of Latin America's manufactured goods were exported, even to other Latin American markets. Second, it meant that virtually none of it would have existed had it not been for tariff protection.

As Coatsworth and Williamson have shown, the larger economies of Latin America had the highest tariffs in the world prior to the World War I. Import tariffs in Latin America were, on average, five times higher than those of the industrialized

[16] Bill Albert, South America and the First World War : The Impact of the War on Brazil, Argentina, Peru, and Chile (New York: Cambridge University Press, 1988), pp. 200-202; Henry Kirsch, Industrial Development in a Traditional Society: The Conflict of Entrepreneurship and Modernization in Chile (Gainesville: University Press of Florida, 1977); Gabriel Palma, "From an Export-led to an Import-substituting Economy: Chile 1914-39," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), pp. 44-45.

countries of Western Europe. They were an order of magnitude higher than those of East Asian countries.[17]

In no other Latin American country have tariffs and tariff policies been as intensively studied as in the case of Mexico. Beginning in 1891, the Mexican government honed the tariff system with an eye toward protecting domestic manufacturers and maximizing government revenues. On the one hand, the government drove down the tariffs on manufactured goods that Mexico did not produce—the goal being to reduce the costs facing the users of those goods and to increase the government's revenues from import taxes. On the other hand, the government drove up the tariffs on goods produced by Mexico's new and rapidly growing industries, the goal being to protect firms from international competition. As table 9 shows, tariff rates on a select group of products were extraordinarily high: 52 to 76 percent for bottled beer, 55 to 87 percent for common cloth, and 49 to 127 percent for paper, to cite but a few. Over the course of the 1890's the level of tariff protection declined because the tariff was specific, not ad valorum, and the peso was depreciating against gold-backed currencies. Declines in nominal tariffs, however, were more than mitigated by the fact that the peso was depreciating in real terms—which provided implicit protection. Given the government's commitment to protecting specific industries, when Mexico switched to the gold standard in 1905, it revised its tariff schedules upwards, so as to insure that favored industries would continue to be protected.[18]

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[17] John H. Coatsworth and Jeffrey G. Williamson, "The Roots of Latin American Protectionism: Looking before the Great Depression," National Bureau of Economic Research Working Paper 8999; Michael Clemens and Jeffrey G. Williamson, "Closed Jaguar, Open Dragon: Comparing Tariffs in Latin America and Asia before World War II," National Bureau of Economic Research Working Paper 9401.

[18] Edward Beatty, Institutions and Investment: The Political Basis of Industrialization in Mexico Before 1911 (Stanford University Press, 2001), chapters three and four; Sandra Kuntz Ficker, "Institutional Change and Foreign Trade in Mexico, 1870-1911," in Jeffrey L. Bortz and Stephen Haber eds., The

Not only were average tariffs high, they were structured so as to provide effective protection: duties on final manufactured goods were high while duties on the inputs to produce those final goods were low or zero. Trade protection in steel illustrates the case clearly. In 1909 the tariff on steel products produced by Mexico's sole integrated steel manufacturer, Fundidora Monterrey, was 43.7 percent. The tariff on products that Fundidora Monterrey did not produce was roughly half that: 22.9 percent. The tariff on the imported inputs that Fundidora Monterrey consumed was 3.4 percent.[19] This was true in the textile industry as well. The tariff on imported cloth tended to be twice that of the tariff on imported raw cotton. The result was an effective rate of protection that varied from 39 to 78 percent.[20] As a consequence, effective rates of protection were quite high. As table 9 shows, many of Mexico's new industries had rates of protection in excess of 100 percent. Examples include beer, cotton cloth, paper, pig iron, and steel rails.

There was also nothing "liberal" about Argentine trade policy. Díaz Alejandro's estimates of the level and structure of protection from 1906 to 1940 demonstrate that Argentine policy makers quite consciously erected protectionist barriers during the first

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Mexican Economy, 1870-1930: Essays on the Economic History of Institutions, Revolution, and Growth (Stanford University Press, 2002); Edward Beatty, "Commercial Policy in Porfirian Mexico: The Structure of Protection," in Jeffrey L. Bortz and Stephen Haber eds., The Mexican Economy, 1870-1930: Essays on the Economic History of Institutions, Revolution, and Growth (Stanford University Press, 2002); Graciela Marquez Colin, "The Political Economy of Mexican Protectionism, 1868-1911 (Ph.D. Dissertation, Harvard University, 2002); Aurora Gómez Galvarriato, "The Impact of Revolution: Business and Labor in the Mexican Textile Industry, Orizaba, Veracruz, 1900-1930" (Ph.D. Dissertation, Harvard University, 1999).

[19] Aurora Gómez Galvarriato, "El desempeño de la Fundidora de Hierro y Acero de Monterrey durante el Porfiriato. Acerca de los obstáculos a la industrialización en México." In Mario Cerutti and Carlos Marichal (eds.), Historia de las grandes empresas en México, 1850-1930 (Mexico: Universidad Autónoma de Nuevo León and Fondo de Cultura Económica, 1997), p. 216.

[20] Aurora Gómez Galvarriato, "The Impact of Revolution: Business and Labor in the Mexican Textile Industry, Orizaba, Veracruz, 1900-1930" (Ph.D. Dissertation, Harvard University, 1999)., p. 604.

decade of the twentieth century, and then maintained them over subsequent decades.[21] As table 10 demonstrates, tariffs on dutiable goods average 30 percent from 1905 to 1909, and 26 percent from 1910 to 1914. Customs duties on manufactured goods ranged between 25 and 50 percent from 1905 to 1924. Some products, such as burlap sacks, beer, and soap enjoyed tariffs above 50 percent. Moreover, the evidence indicates a cascading tariff structure that provided high levels of effective protection: machinery and raw materials could be imported duty free, while final products entered under high duties.[22] The evidence is also unambiguous that there was an organized industrial lobby, the Argentine Industrial Union (founded in 1887) that primarily represented large manufacturers, pushed for protection, and donated funds to the campaigns of politicians who backed protectionist policies. As a consequence, there was a protectionist coalition in the Argentine congress that log-rolled specific tariff increases for a wide variety of industries.[23]

Lederman's work on Chile indicates that its policy-makers began to shift to protectionism in 1897, under pressure from an organized lobbying group, the Sociedad de Fomento Fabril (which had been founded in 1883). His research also demonstrates that the overall pattern for Chile was for increased protection for domestic industries from about 1910 to 1950. Indeed, by the early 1920s Chile's manufacturers were no longer

[21] Carlos F. Díaz Alejandro, Essays on the Economic History of the Argentine Republic (New Haven: Yale University Press, 1970), chap. 5.
[22] Yovanna Pineda, "The Firm in Early Argentine Industrialization, 1890-1930: A Study of Fifty-Five Joint Stock Companies' Owners, Finance Sources, Productivity, and Profits" (Ph.D. Dissertation, University of California Los Angeles, 2002), p. 20.
[23] Fernando Rocchi, "Building a Nation, Building a Market: Industrial Growth and the Domestic Economy in Turn-of-the-Century Argentina," (Ph. D. Dissertation, University of California, Santa Barbara, 1997), pp. 54, 72, 100, 140, 330, 336, 337, 404; Yovanna Pineda, "The Firm in Early Argentine Industrialization, 1890-1930: A Study of Fifty-Five Joint Stock Companies' Owners, Finance Sources, Productivity, and Profits" (Ph.D. Dissertation, University of California Los Angeles, 2002), p. 108.

just demanding (and obtaining) protective tariffs, they actively lobbied for government subsidies to establish a range of new industries.[24]

The history of Brazilian trade protection conforms to the pattern in Mexico, Argentina, and Chile. Manufacturers lobbied for tariff protection on an industry-by-industry basis, and congress granted them tariffs sufficiently high to drive foreign goods from the market. One industry that has been studied in considerable detail is cotton textiles. Beginning in the late 1880s, the government began to push up the tariff on finished cotton cloth, at that same time that it reduced tariffs on raw materials and eliminated the tariffs on cotton textile machinery. In other words, it introduced a cascading tariff structure that allowed for effective protection. As occurred in Mexico, inflation in the 1890s eroded the tariff (tariffs were specific, not ad valorum), but the real depreciation of the exchange rate compensated for the reduction in the tariff. Between 1898 and 1905 the depreciation of the real exchange rate was reversed—the milreis appreciated. As a result, the government increased nominal tariffs. Calculated as ad valorum equivalents, Brazilian textile tariffs increased from 22.4 percent in 1895 to 49.7 percent in 1906.[25]

The evidence about Brazil's industrial tariffs, generally speaking, conforms to what we know about cotton textiles. If we employ the simple metric of dividing import duties by the value of imports—a procedure that underestimates protection, because capital goods and raw materials tended to enter the country duty free—the average tariff rate was 28 percent in 1898, 39 percent in 1901, and 53 percent in 1906. As a

[24] Daniel Lederman, The Political Economy of Protection: Theory and the Chilean Experience (Stanford: Stanford University Press, 2005).
[25] Wilson Suzigan, Indústria Brasileira: Origem e Desenvolvimento (Editora Brasiliense, 1986), pp. 143-45.

consequence, in 1914 a U.S. Department of Commerce agent concluded that Brazil had the highest tariffs of any country in the Western Hemisphere.[26]

Industrial development requires, of course, more than protective tariffs. It also requires the ability to develop or adapt technology, and it requires the ability to mobilize capital in order to purchase the capital goods that are the embodiment of that technology. That is, unless there is a financial system that connects those who have liquid wealth with those who can employ it in productive investments, the growth of industry can be no faster than that permitted by the reinvestment of profits.

A detailed discussion of the political economy of financial system development across Latin America would take us well beyond the space and thematic constraints of this paper. We can offer nothing more than a brief summary of a rapidly growing literature. In broad strokes, there are five major requirements for an efficient financial system: sound public finances; a stable currency; a banking system; a central bank; and well developed securities markets. Some Latin American countries, at some points in time, managed to have some of these features. For example, Mexico in the late nineteenth century had a stable currency, a private banking system, and sound public finances, but it had miniscule securities markets and it lacked a central bank.[27] Similarly,

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[26] Steven Topik, The Political Economy of the Brazilian State, 1889-1930 (Austin: University of Texas Press, 1987), pp. 141, 145.

[27] Noel Maurer, "Banking Regulation and Banking Performance in Porfirian Mexico." In Jeffrey L. Bortz and Stephen H. Haber (eds.), The Mexican Economy, 1870-1930: Essays on the Economic History of Institutions, Revolution, and Growth. Stanford, CA: Stanford University Press, 2002); Noel Maurer, The Power and the Money: The Mexican Financial System, 1876-1928. Stanford, CA: Stanford University Press, 2002); Noel Maurer, "Banks and Entrepreneurs in Porfirian Mexico: Inside Exploitation or Sound Business Strategy?" Journal of Latin American Studies, 31 (1999), pp. 331-361; Noel Maurer and Stephen Haber, "Institutional Change and Economic Growth: Banks, Financial Markets, and Mexican Industrialization," In Jeffrey L. Bortz and Stephen H. Haber (eds.), The Mexican Economy, 1870-1930: Essays on the Economic History of Institutions, Revolution, and Growth (Stanford, CA: Stanford University Press, 2002); Stephen Haber, "Banks, Financial Markets, and Industrial Development: Lessons from the Economic Histories of Brazil and Mexico," in José Antonio Gonzalez, Vittorio Corbo, Anne O. Krueger, and Aaron Tornell eds., Macroeconomic Reform in Latin America: The Second Stage (University

during the period 1890-1914, Brazil had well-developed securities markets, but it did not have any of the other requisites of an efficient financial system. This allowed a boom in industrial development financed by the sale of securities, but this system broke down in the long run because the lack of sound public finances produced an inflationary spiral that undermined the stock and bond markets.[28] Argentina, for its part, had virtually none of the requisites of a sound financial system. Rather, in the years prior to 1914 it essentially free rode on the British financial system.[29] On the whole, Latin American countries tended to be under-banked and tended to have very underdeveloped securities markets. Manufacturers therefore tended to be liquidity constrained, which had negative effects on the extensive growth of industry, the adoption of new technologies, and, hence, on productivity growth.

This is not to say that industrial firms could *never* call on domestic securities markets or banks to finance investment. The large, mechanized firms that dominated product markets in most countries tended to be able to obtain working capital from banks

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of Chicago Press, 2003); Carlos Marichal, "El nacimiento de la banca mexicana en el contexto latinoamericano: problemas de periodización" in Leonor Ludlow and Carlos Marichal (eds.), La banca en México, 1820-1920 (México: Instituto Mora El Colegio de Michoacán El Colegio de México Instituto de Investigaciones Históricas-UNAM, 1998).

[28] Anne Hanley, Capital Markets in the Coffee Economy: Financial Institutions and Economic Change in Sao Paulo, Brazil, 1850-1905 (Ph.D. Dissertation, Stanford University, 1995); Gail Triner, Banking and Economic Development : Brazil, 1889-1930 (New York: Palgrave, 2000); Stephen Haber, "Banks, Financial Markets, and Industrial Development: Lessons from the Economic Histories of Brazil and Mexico," in José Antonio Gonzalez, Vittorio Corbo, Anne O.Krueger, and Aaron Tornell eds., Macroeconomic Reform in Latin America: The Second Stage (University of Chicago Press, 2003).

[29] Lance E. Davis and Robert E. Gallman, Evolving Financial Markets and International Capital Flows: Britain, the Americas, and Australia, 1865-1914 (Cambridge: Cambridge University Press, 2001), chapter six; Andrés Regalsky, "Banking, Trade, and the Rise of Capitalism in Argentina, 1850-1930," in Alice Teichova, Ginette Kurgan-Van Hentenryk, and Dieter Ziegler eds., Banking, Trade, and Industry, Europe, America, and Asia from the Thirteenth to the Twentieth Century (Cambridge: Cambridge University Press, 1997).

to which they were connected by overlapping boards of directors.[30] Some of them were also able to mobilize long-term investment capital by selling equity or bonded debt on organized exchanges. This was particularly the case in Brazil during the period 1890-1914, when the securities markets flourished.[31] It is to say, however, that as a general rule there was differential access to capital: only a limited number of entrepreneurs, particularly those who were well-known merchant-financiers, were able to make use of the financial system to mobilize capital, while everyone else was starved for funds. Differential access to capital explains, in large part, the tendency of Latin American industry toward high levels of concentration, even in industries that were characterized by modest returns to scale technologies: capital market imperfections essentially operated as a barrier to entry.[32]

Nevertheless, by 1913-14 the largest countries in the region had already built substantial industrial sectors. Though the estimates are rough, the available estimates

[30] Noel Maurer and Stephen Haber, "Institutional Change and Economic Growth: Banks, Financial Markets, and Mexican Industrialization," In Jeffrey L. Bortz and Stephen H. Haber (eds.), The Mexican Economy, 1870-1930: Essays on the Economic History of Institutions, Revolution, and Growth (Stanford, CA: Stanford University Press, 2002); Yovanna Pineda, "The Firm in Early Argentine Industrialization, 1890-1930: A Study of Fifty-Five Joint Stock Companies' Owners, Finance Sources, Productivity, and Profits" (Ph.D. Dissertation, University of California Los Angeles, 2002), chaps. 2, 3.

[31] Stephen Haber, "The Efficiency Consequences of Institutional Change: Financial Market Regulation and Industrial Productivity Growth in Brazil, 1866-1934." In John H. Coatsworth and Alan M. Taylor eds., Latin America and the World Economy Since 1800 (Harvard University David Rockefeller Center for Latin American Studies/Harvard University Press, 1998), pp. 275-322; Raghuram G. Rajan and Luigi Zingales, "The Great Reversals: The Politics of Financial Development in the Twentieth Century." Journal of Financial Economics, forthcoming; Aldo Musacchio, "Ordem (na corte) e Progresso: O Poder Judiciário e o mercado financeiro na transformação econômica republicana" Acervo: Revista do Arquivo Nacional, Rio de Janeiro, November 2002.

[32] Stephen Haber, "Banks, Financial Markets, and Industrial Development: Lessons from the Economic Histories of Brazil and Mexico," in José Antonio Gonzalez, Vittorio Corbo, Anne O.Krueger, and Aaron Tornell eds., Macroeconomic Reform in Latin America: The Second Stage (University of Chicago Press, 2003). Yovanna Pineda, "The Firm in Early Argentine Industrialization, 1890-1930: A Study of Fifty-Five Joint Stock Companies' Owners, Finance Sources, Productivity, and Profits" (Ph.D. Dissertation, University of California Los Angeles, 2002), chap. 3.

indicate that manufacturing accounted for 19.4 percent of total value added in Brazil, 16.6 percent in Argentina, 14.5 percent in Chile, and 12.3 percent in Mexico.[33]

From World War One to the Great Depression

The interruption of international capital and product markets with the onset of World War I did not produce a major disruption in Latin America's industrial development. On the one hand, Latin American industry was helped by the fact that the European economies had turned to war production. Thus, even those industries that lacked the political clout to obtain tariff protection during the 1890-1914 period now obtained implicit protection as foreign produced consumer goods disappeared from the market. On the other hand, Latin American industry was hurt by the war in two senses. First, Latin American economic growth prior to 1914 had been financed in large part by foreign capital inflows—particularly from Great Britain. These flows dried up in 1914, and with their disappearance came the stalling of the overall process of growth. Second, Latin American industry tended to import most of its capital and intermediate goods from the advanced industrial economies of the North Atlantic. With the war, these inputs became extremely difficult to obtain. To a degree, domestic producers moved into the production of some of these goods. Until the United States entered the war, some inputs could also be obtained there. Nevertheless, spare parts for machines (as well as new machinery), coal, and chemicals (used for tanning, explosive manufacturing, and textile dyeing and finishing) were all hard to come by. The end result was that Latin American industry continued to grow, but at a modest pace until the war's end.

[33] Brazilian data from Bill Albert, South America and the First World War : The Impact of the War on Brazil, Argentina, Peru, and Chile (New York: Cambridge University Press, 1988), p. 185. Data for other countries from Victor Bulmer-Thomas, The Economic History of Latin America Since Independence (Cambridge: Cambridge University Press, 1994), p. 137.

The slowdown in industrial development during 1914-1918 can be clearly seen in the Brazilian case, where we have excellent serial data. Table 1 presents data on the size of Brazil's cotton textile industry. From 1907 to 1914, the textile industry, measured in spindlage, doubled in size. From 1914 to 1921 the industry grew not at all. It then resumed growing after 1921, roughly increasing in size by fifty percent by the end of the decade. A skeptical reader might argue that this pattern is peculiar to the cotton textile industry. That argument does not stand up, however, to data assembled by Wilson Suzigan on the real value of machinery imports to Brazil. Note that the data set measures flows, not stocks. Also note that Brazil produced virtually no industrial machinery during the period in question: virtually everything was imported from the United States, the United Kingdom, France, and Germany. The data set, presented in Table 11, is thus an excellent estimator of new spending on capital equipment by manufacturing firms. The data are unambiguous: the war produced a dramatic contraction in new investment. In 1914, total machinery imports were only 41 percent of their 1913 level. From 1915 to 1918, machinery imports oscillated between 12 and 17 percent of their 1913 levels.

An even more skeptical reader might argue that the contraction in new spending on capital equipment does not mean that Brazilian industry did not earn windfall profits during the war—profits that could be reinvested later, once it was possible to import capital equipment. In table 12, I test this hypothesis directly by presenting estimates of the profitability of Brazilian cotton textile manufacturing. I present four different measures of profits, each one capturing different concepts of what profits are and who receives them: the nominal rate of return on owner's equity; the real rate of return on owner's equity; the real market rate of return to stockholders; and the real market rate of

return to stock and bondholders.[34] The sampling technique employed was to gather observations on all cotton textile firms listed on the Sao Paulo and Rio de Janeiro stock markets, and to then construct a Divisia (shifting weight) Index. The smallest number of firms in any year was 30. The largest number of firms was 66.

The results are clear: there were no windfall profits during the war. The real rate of return on owner's equity fell during 1914-1918 to an annual average of 4.3 percent, compared to 4.9 percent for the period 1900-1913. The decline in market rates of return was even more severe: real financial returns to stockholders fell from 7.2 percent to *negative 5.2 percent.* A stockholder who bought a portfolio of cotton textile stocks at the end of 1914, reinvested all dividends, and rebalanced his portfolio every year, would have lost 25 percent of his investment by the end of 1918. An investor who took the more conservative approach of buying a weighted portfolio of textile stocks and bonds, who reinvested all dividends, and who rebalanced his portfolio every year would have done somewhat better, but he would still have lost money. The real financial returns to such an investor would have been *negative 1.7* percent per year from 1914 to 1918, compared to 10.3 percent from 1900 to 1913.

[34] The first two measures (the nominal and real rate of return on owner's equity) treat profits as the *book value* of income owned by shareholders divided by the book value of capital owned by shareholders. Income is calculated as dividends plus directors fees plus changes in reserve accounts. Capital is measured as the value of reserve accounts plus the par value of outstanding shares. The only difference in the two measures is that the first is unadjusted for inflation, while the second adjusts both income and changes to the value of reserve accounts in the owner's equity calculation, for inflation. The second two measures (real financial returns to stockholders, and real financial returns to stock and bondholders) treat profits as the *market value* of financial returns to stockholders or to stock and bondholders divided by *the market value* of those investments. Both are adjusted for inflation. In calculating financial profits to shareholders, income is measured as changes in the real market value of stock plus real dividends, and capital is measured as the real market value of stock. In calculating financial profits to stock and bondholders, we assume that investors hold a portfolio of stocks and bonds (weighted by their market capitalization).

The available evidence indicates that Argentina had an experience similar to that of Brazil. Barbero and Rocchi's estimates indicate that industrial output stagnated from 1914 to 1918. The lack of imported raw materials and intermediate goods strangled most Argentine manufacturing firms. Only those firms that had sufficient capacity, and that employed domestic raw materials—such as the wool textile industry—benefited from the war.[35] Not surprisingly, urban unemployment increased from 6.7 percent in 1913, to 13.7 percent in 1914, and to 19.4 percent in 1917.[36] We also know that there was a sharp increase in the number of business failures.[37]

We do not, as yet, have the kinds of systematic data sets for Chile that we do for Argentina and Brazil. Nevertheless, Bill Albert's careful (and critical) evaluation of the secondary literatures indicates that Chile's experience were not dissimilar from those of its neighbors. Industrial output, investment, and employment fell during the early years of the war, and then slowly recovered its 1913 levels.[38]

One implication that emerges from the evidence about Brazil, Argentina, and Chile is that Mexico did not forego an opportunity for rapid industrial expansion because of the Mexican Revolution of 1910-20. The detailed analysis of the Mexican case by Haber, Razo, and Maurer clearly indicates that industrial output and investment

[35] María Inés Barbero and Fernando Rocchi, "Industry," in Gerardo della Paolera and Alan M. Taylor, A New Economic History of Argentina (Cambridge: Cambridge University Press, 2003), pp. 261, 265.

[36] Yovanna Pineda, "The Firm in Early Argentine Industrialization, 1890-1930: A Study of Fifty-Five Joint Stock Companies' Owners, Finance Sources, Productivity, and Profits" (Ph.D. Dissertation, University of California Los Angeles, 2002), p. 39.

[37] Paul H. Lewis, The Crisis of Argentine Capitalism (Chapel Hill: University of North Carolina Press, 1990), p. 35.

[38] Bill Albert, South America and the First World War : The Impact of the War on Brazil, Argentina, Peru, and Chile (New York: Cambridge University Press, 1988), pp. 202-210.

contracted sharply in Mexico during the years of civil war (1913-1917).[39] Their analysis also indicates little in the way of the destruction of physical plant, as well as a swift recovery of output and investment as soon as the civil war ended. In fact, data on the importation of industrial machinery to Mexico (Table 13) demonstrate more or less the same pattern as do the data on Brazil (Table 11): a severe contraction in 1914-1917, followed by a dramatic recovery. The implication is that even had there been no revolution to interrupt factor and product markets, Mexican output and investment would have been depressed because of the shortage of raw materials, machines, and spare parts.

With the end of hostilities in 1918, the same process that had permitted the expansion of industry prior to 1914 began anew. Great Britain was no longer the dominant consumer of Latin American export goods, the dominant source of foreign capital flows, and the dominant source of machinery and equipment. The United States had taken over all of those roles. From the point of view of industrial development, however, this change made little difference: foreign investment and foreign markets drove an overall growth process, one of whose outcomes was the rapid expansion of domestic manufacturing industry.

Brazil provides a relevant (and intensively studied) case in point. As table 1 indicates, its cotton textile industry, whose growth had stalled from 1914 to 1921, grew by 66 percent from 1921 to 1927. By this point, with 2.7 million spindles in operation, it dwarfed the cotton textile industry of any other Latin American country. New manufacturing investment was not just confined to cotton textiles. As table 11 indicates,

[39] Stephen Haber, Armando Razo, and Noel Maurer, The Politics of Property Rights: Political Instability, Credible Commitments, and Economic Growth in Mexico, 1876-1929 (Cambridge University Press, 2003), chapter five.

roughly 75 percent of new machinery imports during the 1920s were in industries other than textiles. Moreover, during the 1920s the average annual flow of industrial machine imports was 44 percent higher than it had been from 1900 to 1913. Output increased with the growth of new investment. The available estimates indicate that between 1920 and 1928, total industrial output grew anywhere from 28 percent (the Villela-Suzigan estimates) to 57 percent (the Haddad estimates).[40]

The increase in investment and output was, in part, the consequence of investments in established lines of manufacturing, such as textiles, beverages, hats, and footwear. The growth of investment and production, however, went far beyond established industries, and even included the production of some intermediate and capital goods. These new industries included chemicals, iron and steel, gas appliances, cement, electrical hardware, rayon textiles, tobacco products, tires, and machinery of various types, including electric motors, sugar processing equipment, and textile spinning and weaving machines.[41] Many of the machinery manufacturers had started out as repair shops, and had moved into machine fabrication during and after World War One. Some of them, however, were subsidiaries of U.S. and European firms that were now beginning to open factories abroad. These included General Electric, RCA, IBM, Ericsson, Philips,

[40] Flavio Rabelo Versiani, "Before the Depression: Brazilian Industry in the 1920s," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 145.

[41] Flavio Rabelo Versiani, "Before the Depression: Brazilian Industry in the 1920s," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), pp. 145-47, 155.

and Standard Electric. In addition, during the 1920s, foreign companies—particularly Ford and General Motors—erected automobile assembly plants in Brazil.[42]

The 1920s, in particular, saw the expansion of the Brazilian steel industry, with the entry of the first modern firms into production. As table 14 demonstrates, circa 1920, Brazilian producers had already pushed foreign-made pig iron out of the market. By the end of the 1920s, they had driven foreign-made steel ingots out as well, and had begun to compete with foreign made rolled steel products. By 1940, they had captured one-third even of this fast-growing market.

Mexico's experience during the 1920s was similar to that of Brazil. Firm and industry level data from the cotton textile, beer, steel, cement, cigarette, and dynamite industries all point in the same direction: there was substantial new investment in plant and equipment from 1918 through the late 1920s.[43] Data on the export of industrial machinery from the United States and Great Britain to Mexico provide independent verification of the data from individual industries. As table 13 indicates, during the 1920s industrial machinery exports to Mexico were anywhere from twice (in the case of textile machines) to six times (manufacturing machines other than textiles) what they had been during the period 1900-1910. In part, the growth of investment took place in domestic firms that had been established before 1910. In part, there was also the founding of new firms that manufactured products that previously had been imported, such as cotton knitwear and rayon cloth. Finally, the growth of investment also included

[42] Flavio Rabelo Versiani, "Before the Depression: Brazilian Industry in the 1920s," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 156.

[43] Stephen Haber, Armando Razo, and Noel Maurer, The Politics of Property Rights: Political Instability, Credible Commitments, and Economic Growth in Mexico, 1876-1929 (Cambridge University Press, 2003), chapter five.

the establishment of subsidiaries of foreign corporations. These included the British-American Tobacco Company, the International Match Company, the Dupont de Nemours Company, the Palmolive Company, and the Ford Motor Company.[44]

As investment climbed, so did output. The data sets put together by Haber, Razo, and Maurer on the steel, cement, cigarette, beer, cotton textile, and dynamite industries all point in the same direction: sustained and dramatic growth from 1918 through the 1920s. In all six industries, national firms satisfied all of Mexican demand, pushing imports out of the market. Data on small scale manufacturing, such as hats, shoes and boots, and the confection of clothing, cannot be retrieved directly. Data is available, however, on one of the most important inputs into all of these industries: electric power consumption in Mexico City for commercial purposes. To the degree that this proxies output in small scale industries (the data exclude power generated for the water, tramway, or public lighting systems), the evidence is unambiguous: as table 16 demonstrates, power consumption increased by 60 percent from 1910 to 1920, and then doubled from 1920 to 1927.[45]

Data on Chilean industrial investment and production tell much the same story. Palma's estimates of Chilean manufacturing output not only indicate that production increased during the 1920's, but that Chilean industrialists were diversifying beyond the production of consumer non-durables. Total manufacturing output grew 24 percent

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[44] Stephen Haber, Armando Razo, and Noel Maurer, The Politics of Property Rights: Political Instability, Credible Commitments, and Economic Growth in Mexico, 1876-1929 (Cambridge University Press, 2003), chapter five.

[45] Stephen Haber, Armando Razo, and Noel Maurer, The Politics of Property Rights: Political Instability, Credible Commitments, and Economic Growth in Mexico, 1876-1929 (Cambridge University Press, 2003), chapter five.

between 1918 and 1925. Even more striking, the share of consumer durable, intermediate, and capital goods in total output increased from 18 percent to 24 percent. The rate of growth of total manufacturing output slowed during the latter half of the 1920s, but the diversification into more complex goods continued. By 1929, 29 percent of Chilean industrial production was made up of consumer durables, intermediate, and capital goods. The two fastest growing industries were chemicals (whose output nearly doubled from 1918 to 1929) and metal machinery and transport equipment (whose output nearly tripled during the same period).[46]

Argentina's experience parallels that of Chile. Argentine industry continued to expand in the 1920s, but at a slower pace than it had prior to 1914. At the same time, industrial production began to shift away from beverages and foodstuffs, and toward chemicals, metal products, and textiles. Circa 1914, chemicals and oils accounted for only 3 percent of output. By 1935, they were ten percent. Over the same period, metals and machinery jumped from 5 percent of industrial output to 14 percent, while textiles grew from 11 percent to 21 percent.[47] As a consequence, by 1929 Argentine manufacturers had largely pushed foreign produced paper, chemicals, textiles, and other products out of the market. They had even made inroads in the production of machinery and metal working. (See table 8).

[46] Gabriel Palma, "From an Export-led to an Import-substituting Economy: Chile 1914-39," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), pp. 51-53.

[47] María Inés Barbero and Fernando Rocchi, "Industry," in Gerardo della Paolera and Alan M. Taylor, A New Economic History of Argentina (Cambridge: Cambridge University Press, 2003), pp. 272-73.

Industrial Development During the Great Depression

The growth of manufacturing industry after 1930 was, therefore, a broadening and elaboration of a process that had been going on for quite some time. Moreover, just as was the case during the 1890-1930 period, the post-1930 period was also characterized by ad hoc policy responses to changes in the economic environment. Politicians, businessmen, and organized labor responded to events as they were overtaken by them. The result was tariff protection, multiple exchange rate systems, quantitative restrictions on imports, government-owned industrial development banks, parastate enterprises, and a style of industrial development that was decidedly inward-looking, technologically backward, and inefficient. It should be kept in mind, however, that these were the ex-post outcomes of an ad hoc process, rather than the result of carefully thought-out plans or "growth strategies."

The Great Depression hit Latin America hard and early. Well before Wall Street's Black Friday, the prices of most Latin American exports had been steadily falling. With the contraction of the U.S. and European economies during 1930-32, export prices, as well as export volumes, went into free fall. The result was a dramatic contraction of Latin American export earnings. In Mexico, to cite a relevant example, total export earnings in 1932 were only one-third their 1928 level.[48] Chile, to cite another example, was even harder hit: its export earnings in 1932 were only one-sixth their 1929 level.[49]

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[48] Stephen Haber, Industry and Underdevelopment: The Industrialization of Mexico, 1890-1940 (Stanford: Stanford University Press, 1989), p. 153.

[49] Gabriel Palma, "From an Export-led to an Import-substituting Economy: Chile 1914-39," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 55.

In the short run, the collapse in exports caused a dramatic contraction of the manufacturing sector. Consider, for example, the case of Mexico. Cárdenas' estimates of total industrial output indicate a decline of 31 percent from 1929 to 1932.[50] Data from individual industries provides independent confirmation of these aggregate estimates: steel output fell by 67 percent, beer by 41 percent, cotton textiles by 22 percent, cement by 13 percent, and cigarettes by eight percent. In industries where there had been substantial investment in new plant and equipment in the 1920s the results were catastrophic. In the cigarette industry, for example, the leading firm (a subsidiary of the British American Tobacco Company) was able to operate at only 37 percent of capacity. The cement industry (where capacity had close to doubled in the late 1920s) was even more hard hit: it operated at only 34 percent of capacity in 1932.[51] As sales collapsed, so too did the financial statements and share prices of manufacturing firms. Estimates by Haber of real financial returns indicates that an investor who purchased a portfolio of common stock in Mexico's largest, publicly traded manufacturing companies would have sustained a loss of 7.8 percent *per year* from 1926 to 1932.[52]

The experiences of other Latin American countries mirror that of Mexico. From 1929 to 1932 total manufacturing output fell by 22 percent in Chile and by seven percent

[50] Enrique Cárdenas, "The Process of Accelerated Industrialization in Mexico, 1929-1982," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 179).

[51] Stephen Haber, Industry and Underdevelopment: The Industrialization of Mexico, 1890-1940 (Stanford: Stanford University Press, 1989), pp. 158, 163, 165.

[52] Stephen Haber, Industry and Underdevelopment: The Industrialization of Mexico, 1890-1940 (Stanford: Stanford University Press, 1989), p. 169.

in Brazil.[53] The latter figure is almost certainly a gross underestimate.[54] Much as happened in Mexico, the profitability of manufacturing firms fell sharply. Our index of real rates of return on owner's equity in the Brazilian cotton textile industry indicates that firms, on average, lost money in 1929 and 1930, and barely managed to turn a profit in 1931. (See table 12).

In the medium term, however, the depression created conditions that were favorable to industrial development. The response of governments around the world during the depression was to abandon the gold standard. In the context of a dramatic decline in Latin American exports, the resulting system of freely floating exchange rates produced dramatic currency devaluations. These devaluations did not produce concomitant jumps in domestic inflation. The result was that virtually every Latin American country saw its currency devalued in real terms during the 1930s.

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[53] Flavio Rabelo Versiani, "Before the Depression: Brazilian Industry in the 1920s," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 159; Gabriel Palma, "From an Export-led to an Import-substituting Economy: Chile 1914-39," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 60.

[54] Data from individual manufacturing industries indicates that the seven percent decline is a gross underestimate. Output fell by 23 percent in beverages, 24 percent in shoes and boots, 58 percent in hats, and 29 percent in furniture. (Flavio Rabelo Versiani, "Before the Depression: Brazilian Industry in the 1920s," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 159). The reason for the discrepancy between individual industries and the aggregate series likely resides in the fact that the latter are strongly influenced by cotton textiles (the largest industry in Brazil). As I have shown elsewhere, the standard IBGE series on textile output seriously understate the dimensions of the downturn in that industry. The reason is that the textile "output" series are, in fact, series on textile sales. Sales actually fell less far than output, because manufacturers applied steep discounts in order to move unsold textiles, which had been accumulating since the late 1920s, out of their warehouses. Textile output did, in fact, decline dramatically—by some 39 percent from 1927 to 1930—but this decline is not picked up in the standard series. See Stephen Haber, "Business Enterprise and the Great Depression in Brazil: A Study of Profits and Losses in Textile Manufacturing," Business History Review 66 (Summer 1992), pp. 335-363.

The result was the rapid growth in manufacturing output. Output growth was not only high compared to the rest of the world (in the U.S. and Canada, industrial growth was near zero during the 1930s), but was also high compared to the rate of growth of Latin America's other economic sectors.[55] In Brazil, for example, manufacturing output increased by 82 percent from 1928 to 1939. Solis' estimates for Mexico indicate that total manufacturing output in 1939 was roughly double that in 1925, with most of the growth coming after 1934.[56] The story was much the same in Chile: total manufacturing output grew by 30 percent from 1929 to 1939, at the same time that GDP growth was flat for the economy in general.[57] Argentine data tell much the same story. Total manufacturing output grew by 3.4 percent per year from 1925-29 to 1937-39.[58] The result was that by 1939 manufacturing accounted for 16.5 percent of Latin America's total GDP.[59]

In some industries, particularly those associated with construction or metal-working, output growth during the 1930s was staggering. In the cement industry, for example, between the late 1920s and the late 1930s cement production grew more than

[55] Carlos F. Díaz Alejandro, "Latin America in the 1930s," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 34.

[56] E.V.K. Fitzgerald, "Restructuring through the Depression: The State and Capital Accumulation in Mexico, 1925-1940," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 241.

[57] Gabriel Palma, "From an Export-led to an Import-substituting Economy: Chile 1914-39," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 60.

[58] Carlos Díaz Alejandro, Essays on the Economic History of the Argentine Republic (New Haven: Yale University Press, 1970), p. 220.

[59] Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp, "Introduction," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 17.

14-fold in Colombia, six-fold in Brazil, four-fold in Argentina, and two-fold in Mexico.[60] The result was that by the end of the 1930s, domestic cement production pushed imported cement completely out of the market. A similar process occurred in the Brazilian steel industry, where, from 1929 to 1939, the output of steel ingots increased more than four – fold (to 114 thousand tons) and the output of rolled steel products increased three-fold (to 101 thousand tons).[61] (See table 14). Thus, even before the founding of the much-vaunted Volta Redonda works in the 1940s, Brazil was already the largest steel producer in Latin America, dwarfing even Mexico's well established industry by a factor of three.[62] It had also pushed foreign produced steel ingots from the market, and had captured 31percent of the domestic market for rolled shapes.[63]

Much of the increase in output during the 1930s was accomplished by running capacity that had been installed in earlier decades on an intensive basis.[64] Suzigan's estimates of the importation of manufacturing machinery to Brazil, for example, indicate that flows of new machinery were 11 percent lower in real terms during the ten year period 1930-39 than they had been during 1920-29, and were no higher than they had

[60] Carlos F. Díaz Alejandro, "Latin America in the 1930s," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 35; Stephen Haber, Industry and Underdevelopment: The Industrialization of Mexico, 1890-1940 (Stanford: Stanford University Press, 1989), p. 169.

[61] Werner Baer, The Development of the Brazilian Steel Industry (Nashville, Tenn: Vanderbilt University Press, 1969), p. 61.

[62] Mexico data from Stephen Haber, Industry and Underdevelopment: The Industrialization of Mexico, 1890-1940 (Stanford: Stanford University Press, 1989), p. 177.

[63] Werner Baer, The Development of the Brazilian Steel Industry (Nashville, Tenn: Vanderbilt University Press, 1969), p. 61.

[64]Carlos F. Díaz Alejandro, "Latin America in the 1930s," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 36.

been during the ten years prior to World War One. (See table 11). In the steel industry, which witnessed impressive output growth in the 1930s, virtually all of the output in 1939 was produced by firms that had been founded during the 1920s.[65] Data from Mexico indicate much the same pattern. The flow of new manufacturing machinery during 1930-35 was roughly half of what it had been from 1920 to 1929. Even in 1935, when the output recovery was in full swing, the flow of new manufacturing machinery was only a fifth of what it had been during the latter part of the 1920s (see table 13). The data on Argentina's industrial plant yield similar results. In 1935, 78 percent of industrial output was produced by firms that had been founded before 1930.[66] Similar data for 1946 indicate that there was not a tremendous amount of investment in the period after 1935. As late as 1946, 61 percent of industrial output was produced by firms that had been founded before 1930. (See table 17). In some industries, firms that pre-dated the 1930s accounted for the vast majority of total production in the late 1940s. As table 18 demonstrates, firms founded before 1931 accounted for 97 percent of tobacco production in 1948. The ratio was 85 percent in gas and electricity, 74 percent in petroleum refining, 72 percent in food and beverages, 60 percent in paper, 60 percent in vehicles, and 57 percent in metals and chemicals.

This is not to argue that there were no new firms founded and no new industries developed during the 1930s. There were individual industries that underwent substantial capacity growth in the 1930s. One such case was the Brazilian metal-working and

[65] Calculated from data in Werner Baer, The Development of the Brazilian Steel Industry (Nashville, Tenn: Vanderbilt University Press, 1969), p. 65.

[66] Jorge Katz and Bernardo Kosacoff, "Import-Substituting Industrialization in Argentina, 1940-1980: Its Achievements and Shortcomings," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 282.

machinery industry, in which many new firms established. These firms produced agricultural machinery, textile spinning and weaving machinery, wood-working machinery, refrigeration equipment, boilers, elevators, and printing equipment, along with a host of other products.[67] These new industries included consumer goods as well. In Mexico, for example, literally hundreds of small firms sprang up during the latter part of the 1930s, producing goods such as silk and rayon flat crepes, cotton knitwear, rayon knitwear, and hosiery.[68] Data from Chile indicate that a similar process took place: thousands of firms with workforces from 5 to 100 were founded between 1927 and 1937.[69] The Argentine data on industrial production in 1946, presented in table 17, tell the same story. There were lots of new firms founded from 1931 to 1946 (they accounted for 62 percent of firms operating in 1946). These firms only accounted, however, for 37 percent of output. If we take the ratio of firms to output for the periods before and after 1931, we generate a rather striking result: firms founded during 1931-46 were roughly one-third the size of firms founded before 1931.

All of this is to say that one the eve of World War II, Latin America was already highly industrialized. The Argentine data on the market shares of domestic producers of basic manufactured goods perhaps capture the general situation. Circa 1939, domestic producers had pushed imported products out of the market for food and beverages, tobacco products, clothing, construction materials (stone, glass, ceramics) and rubber

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[67] Wilson Suzigan, Indústria Brasileira: Origem e Desenvolvimento (Editora Brasiliense, 1986), p. 281.

[68] Stephen Haber, Industry and Underdevelopment: The Industrialization of Mexico, 1890-1940 (Stanford: Stanford University Press, 1989), p. 186.

[69] Gabriel Palma, "From an Export-led to an Import-substituting Economy: Chile 1914-39," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), p. 60.

tires. Domestic producers had also taken more than half the market in industries such as metal working, chemicals, machinery and vehicles, textiles, paper, and wood products. (See table 8).

The political process by which tariff protection had been awarded to favored manufacturers during the years before 1914 continued throughout the 1920s, and then accelerated in the 1930s. In Chile, for example, there were multiple revisions of the tariffs after 1914, including major increases in 1916 and 1921. The latter increased tariffs by 50 percent, and established special taxes of 100 percent on certain goods. (Lederman 2005: 61) The 1928 tariff revision went even farther: it not only increased in the number of goods subject to import duties, it also gave the president the right to raise tariffs on any product without the need to consult congress. Not surprisingly, within two years, President Ibañez had used this provision to increase import taxes on 440 different customs classifications. On average, tariffs increased by 71 percent from 1928 to 1930, and covered 73 percent of imports. The Chilean government increased tariffs again in 1931. In 1933, President Alessandri put through an across the board tariff increase of 50 percent. A year later, he replaced that increase with a tariff surcharge of 100 percent, which was further increased in 1935 to 300 percent.[70]

The history of Mexican tariff setting is much the same. Mexico, as we discussed earlier, had been extremely protectionist during the Díaz dictatorship. During the 1910-20 Revolution, the Mexican government had tried to lower tariff rates, and had achieved some success. Near as they can be measured, tariffs in 1920 were at roughly half their

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[70] Gabriel Palma, "From an Export-led to an Import-substituting Economy: Chile 1914-39," in Rosemary Thorp ed., An Economic History of Latin America, Volume 2, Latin America in the 1930s: the Role of the Periphery in World Crisis (London: Palgrave, 2000), pp. 48, 58.

1910 level.[71] Under intense pressure from manufacturers (and from Mexico's politically powerful labor federation—the Confederación Obrera Regional de Mexico) in the mid-1920s textile tariffs climbed back to their Porfirian levels. Aurora Gómez-Galvarriato's careful estimates indicate that the effective rate of protection for common cotton cloth was 38 percent in 1923, 46 percent in 1927, and *345 percent* in 1930. Tariffs on fine weave goods rose even faster: the effective rate of protection was 53 percent in 1923, 65 percent in 1927, and *397 percent* in 1930.[72] These results are consistent with those obtained by Graciela Márquez for a broader range of goods. Her estimates indicate that for consumer goods as a whole (not including foodstuffs) the average nominal tariff in 1924 was 38 percent. In 1930, the average tariff on that same group of products had increased to 47 percent. In some individual product lines the average tariff had increased even more dramatically. In textiles, for example, the tariff increased from 45 to 59 percent. In manufactured clothing, the tariff increased from 43 to 69 percent. Moreover, in intermediate goods, the average tariff (36 percent in 1930) was lower than in non-agricultural consumer goods (47 percent in 1930), suggesting a cascading tariff structure.[73] Márquez' estimates of intermediate goods tariffs, it should be pointed out, are

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[71] For the coefficient of protection before and after the revolution see: Daniel Cosio Villegas, La cuestión arancelaria en México. (Mexico City: Universidad Nacional Autónoma de México, 1989), p. 58. Aurora Gómez Galvarriato's estimates for the cotton textile industry indicate the same magnitude of change. See her, "The Impact of Revolution: Business and Labor in the Mexican Textile Industry, Orizaba, Veracruz, 1900-1930" (Ph.D. Dissertation, Harvard University, 1999), pp. 604-08. For a discussion of the political battles surrounding the tariff in 1920 see, María del Carmen Collado Herrera, Empresarios y políticos, entre la Restauración y la Revolución 1920-1924. Mexico City: Instituto Nacional de Estudios Históricos de la Revolución Mexicana, 1996), p. 208.

[72] Aurora Gómez Galvarriato, "The Impact of Revolution: Business and Labor in the Mexican Textile Industry, Orizaba, Veracruz, 1900-1930" (Ph.D. Dissertation, Harvard University, 1999), pp. 604-08.

[73] Graciela Márquez Colin, "Protección y cambio institucional: la política arancelaria del Porfiriato a la Gran Depresión. (Working Paper, El Colegio de México, Centro de Investigaciones Económicas, Mexico City, 2001).

most likely upward biased, because they are strongly driven by chemicals and iron and steel products—industries that existed in Mexico and that demanded protection from foreign competition. A sample drawn on intermediate goods that were not manufactured domestically would probably indicate even lower tariffs on intermediate goods. In short, the evidence indicates that the same trend that we saw in textiles—of increasing rates of effective protection—almost certainly held across manufacturing as a whole.

The evidence on other Latin American countries, while less plentiful, runs in the same direction as that for Chile and Mexico. In Brazil, for example, the evidence regarding cotton textiles indicates that tariffs fell during World War I (when industry received implicit protection from the war), but then were raised by the government in the 1920s. Circa 1928, the tariff on common cotton cloth was 100 percent. Tariffs on capital and intermediate goods were high as well, although they were not at the astronomical level of textiles. This suggests a cascading tariff structure, and thus positive effective rates of protection.[74] In some countries, governments began to substitute quantitative restrictions for tariffs, essentially not letting in foreign produced goods at any price. This was the case, for example, in Argentina, where the government successively revised tariffs upwards, devalued the currency, and introduced quantitative restrictions on imports.[75]

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[74] Marcelo de P. Abreu, Alfonso S. Bevilaqua, and Demosthenes M. Pinho, "Import Substitution and Growth in Brazil, 1890s-1970s," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 157.

[75] Jorge Katz and Bernardo Kosacoff, "Import-Substituting Industrialization in Argentina, 1940-1980: Its Achievements and Shortcomings," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 283.

The broad range of tariff and non-tariff barriers to trade that governments put into place in the 1930s were not conceived by policy makers as permanent. Rather, they were ad hoc responses to short-term crises. If fact, from the point of view of governments, tariff and non-tariff barriers made a great deal of economic sense—without even considering the political benefits of protecting domestic manufacturing. The collapse of export revenues meant that governments faced balance of payments problems. Negative trade balances could not be offset by positive balances on the capital account, because sources of foreign lending and foreign direct investment had largely dried up during the depression. Thus, governments needed to find ways to stop hemorrhaging foreign exchange to pay for imports—tariffs and quantitative restrictions were the obvious instruments to bring about this result.[76]

Post-1940 Industrial Development

In the ensuing decades, the ad-hoc protectionist policies of the 1890s through the 1930s were deepened, broadened, given intellectual justification by development economists,[77] and made into quasi-permanent features of the region's political economy. The reasons were several fold: implicit protection from World War II; chronic shortages of foreign exchange; and the political power of organized industrialists and organized industrial workers. Let us take up each of these in turn.

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[76] Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp, "Introduction," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 10.

[77] For a discussion of how development economists came to embrace protectionism in developing countries, see Anne O. Krueger, "Trade Policy and Economic Development: How We Learn," American Economic Review 87:1 (March 1997), pp. 1-22.

As we have already seen, the experience with implicit protection via exchange rate depreciation during the early 1930s was soon followed in many countries by explicit protection in the form of tariff increases and quantitative restrictions on imports. Because tariffs in most countries were specific, not ad valorum, one would expect domestic price inflation to have gradually eaten away at the protection afforded by these tariffs. That did not occur, however, because the protectionist 1930s were followed by another long period of implicit protection—this one provided by World War II.

The specific effects of the war cut two ways. On the one hand, the war meant that manufacturers of consumer goods were protected from foreign imports. On the other hand, the war also meant that they had difficulty obtaining imported machinery, spare parts, and intermediate inputs. During World War I, the latter effect had dominated the former, and accounts, in part, for the sluggish performance of industry during 1914-18. By the 1940s, however, the situation was different: Latin America had substantially greater industrial capacity than had been the case in 1914. Moreover, most of the larger countries also had metal-working industries that were capable of repairing, if not copying, manufacturing machinery. This was particularly the case in Argentina and Brazil, where machine repair and fabrication had been taking place since the 1920s. There had also been the development of some intermediate goods industries during the 1920s—particularly basic chemicals.

The result was that it was possible to run a good deal, although certainly not all, of the already installed plant and equipment around the clock, even if it was not possible to import new capital equipment. This appears to have been particularly true in the Mexican case, where as Clark Reynolds has shown, most output growth in the 1940s

came from running capacity installed in the decades before World War II.[78] It was also true in Argentina, where the ability to run existing plant intensively allowed manufacturers to grab market share from imports. In textiles, for example, by 1946-49, domestic manufacturers had increased their market share to 85 percent (compared to 56 percent in 1937-39). Over the same period, domestic producers increased their market shares in paper making (from 60 percent in 1937-39 to 70 percent in 1946-49), electrical machinery (from 44 percent to 78 percent), and chemicals (from 60 to 81 percent). (See Table 8) Regardless of the intensity with which firms ran old factories during World War II, the end result was the same: there was lots of time—roughly the 15 years from the onset of the Great Depression to the end of World War II —for Latin American manufacturers to become *very accustomed* to captive domestic markets.

Manufacturers were not the only group that had come to view trade protection—either implicit or explicit—as a given: Latin America's politically powerful industrial workers had as well. In part the growing influence of labor was a function of numbers: there were plain and simply more miners, stevedores, railway-men, and factory workers in the 1930s than there had been in 1900. In equal part, however, workers had, by the 1930s, become increasingly well organized. In some countries, Mexico being perhaps the archetypal case, they had begun to fuse unions together into national labor federations that were affiliated with political parties. The economic crisis of the early 1930s had brought down many of the governments of the inter-war period, or had thrust those

[78] Clark W. Reynolds, The Mexican Economy: Twentieth Century Structure and Growth (Yale University Press, 1970), pp. 161-68. Enrique Cárdenas notes that Mexico was somewhat unique among Latin American countries during World War II in that it was able to export a good deal of its output. His calculations indicate that 79 percent of the increase in output during the war can be attributed to exports. Enrique Cárdenas, "The Process of Accelerated Industrialization in Mexico, 1929-1982," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century

governments into crisis. The response, not just in Latin America but around the world, was that politicians had to search for groups that could be part of new coalitions. Given the fact that unions had quantitatively large memberships, were able to mobilize supporters and coordinate their actions, and often had leaderships who were not ideologically opposed to capitalism, they were natural coalition partners for the governments that came to power in the 1930s and 1940s. That is, Latin America's "populist" governments, which historians often identify with particular political leaders such as Getulio Vargas, Juan Perón, and Lazaro Cárdenas, were the product of a more fundamental and larger political process by which some *organized subset* of the working class traded its political support for job security and upward mobility for *its membership alone*.

Once organized labor had been brought into the governing coalitions of most countries, its leadership quickly became strong advocates of trade protection. This is not to say that the relationship between labor unions and manufacturers was not acrimonious, conflictive, and adversarial. It was deeply so. It is to say, however, that both groups saw it in their interest to defend the protection that afforded them stable jobs, stable profits, and (for union leaders) a stable flow of revenues from their rank and file. In fact, the informal coalitions that came to exist between organized labor and organized industrialists were so powerful that even the military governments of the 1960s and 1970s—with the notable exception of Chile's Pinochet government—did not attempt to tinker with protectionism in any serious manner.

Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), pp. 184-85.

One might consider it odd that even right wing, military governments were so easily swayed by protectionist lobbying from industrialists and (left-leaning) labor unions, until you consider that the incentives of governments, regardless of their ideological stripe, were also aligned with trade protection. Latin American governments during the post-war period were confronted by chronic balance of payments problems. On the one hand, Latin American countries were losing market share to other developing countries in their major mineral and agricultural exports. Some sense of this can be gleaned from the following four data points: in 1946, Latin America accounted for 13.5 percent of world exports; by 1955 that figure stood at 8.9 percent, by 1965 at 6.2 percent, and by 1975 at 4.4 percent.[79] On the other hand, Latin America could not substitute net capital inflows for decreasing export revenues. Prior to 1914, trade deficits were financed by positive balances on the capital account—as a result of foreign direct investment and foreign loans. In the post-war period, those sources of finance were no longer as freely available. The extent to which capital flows decreased can be seen in table 19. Circa 1914, foreign direct investment in the larger countries of the region was a large multiple of their gross domestic products: FDI was 2.6 times GDP in Argentina, 2.96 times in Brazil, 1.63 times in Chile, and 1.83 times in Mexico. By 1929, these ratios, as well as those for smaller economies, had fallen substantially: FDI in these economies was now roughly equal to GDP. The ratios decreased even further during the 1930s, and then collapsed almost completely thereafter. Circa 1950, foreign direct investment was only a small fraction of GDP: 0.12 in Argentina, 0.18 in Brazil, 0.49 in Chile, and 0.17 in Mexico. It then stayed at that level until the 1970s.

[79] Alan M. Taylor, "On the Costs of Inward-Looking Development: Price Distortions, Growth, and Divergence in Latin America," Journal of Economic History 58 (March 1998), pp. 1-28.

The upshot was that Latin American governments had to find ways to either increase exports or decrease imports. Given the political costs associated with each option, governments tended to chose the latter: Boosting exports typically requires the politically unpopular step of a major currency devaluation; decreasing imports simply requires a tariff. In addition, there were time-horizon considerations: increasing exports takes years; decreasing imports can be done overnight. This was even true of military governments, which one might assume to operate with longer time horizons. In Argentina, for example, the military government of Martínez de Hoz tried to lower tariffs and eliminate non-tariff barriers when it came to power in the spring of 1976. In the short run it was successful, driving down average tariffs from 94 percent when it came to power, to 53 percent before the year was out. It also eliminated quotas and other non-tariff restrictions. In the next several years, it pushed tariffs down even further, reaching 26 percent in 1979, with an announced goal of 15 percent for 1981. It could not stay the course, however. By 1980, Argentina was running current account deficits, as imported goods flooded the market. Investors came to believe that the government would have to devalue, in order to check the tide of imports. The result was capital flight. Part of the response was predictable: the government was forced to devalue the currency. Part of the response was somewhat less predictable: the government completely reversed course on trade liberalization; it returned to protectionism, and embraced high tariffs, quantitative restrictions on imports, and exchange controls.[80]

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[80] Jorge Katz and Bernardo Kosacoff, "Import-Substituting Industrialization in Argentina, 1940-1980: Its Achievements and Shortcomings," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 301.

The conjuncture of political and economic constraints meant that once Latin American governments put protective tariffs or non-tariff barriers into place, they did not subsequently remove them. As one author has put it: protectionism was not a time-bound process, instead every ad hoc protectionist policy became a "permanent conquest."[81] The result was that the ad hoc policies of the 1940s and 1950s became enshrined until the economic collapse of the 1980s. Just how protectionist the Latin American economies were can be gleaned from Table 20, on nominal rates of protection, circa 1960. There are two striking patterns to the data. First, import tariffs on manufactures were astronomically high relative to those of the European Economic Community. In consumer goods, tariffs were almost always in excess of 100 percent and were as high as 328 percent. Second, the lower tariffs on capital goods, semi-manufactures, and industrial raw materials, while still high by EEC standards, were significantly lower than the tariffs on consumer goods. The implication is that effective rates of protection were also extremely high. Joel Bergsman's detailed study of Brazilian effective rates of protection bears this out. In 1967, after a reform that drastically *lowered* tariffs, the average effective rate of protection on Brazilian manufactures was 117 percent.[82] The available evidence for other countries runs in the same direction: circa 1960, the effective rate of protection on consumer durable goods was 285 percent in Brazil, 123 percent in

[81] Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp, "Introduction," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 16.

[82] Joel Bergsman, "A Política Comercial no Pós-Guerra," in Flavio Rabelo Versiani and José Roberto Mendonca de Barros, Formaçao Econômica do Brasil: A Experiência da Industrializaçao (Sao Paulo: Ediciones Saraiva, 1977), p. 396.

Chile, and 85 percent in Mexico.[83] The available data on Argentina tell the same story: the average effective rate of protection in 1969 was 97 percent.[84]

In addition to tariff walls, virtually every Latin American country also had quantitative restrictions on imports. These required importers to obtain permits from the government, in addition to paying the tariff, in order to bring a particular product or input into the country. From the point of view of governments, such permit systems were advantageous because permits could be used as patronage to maintain the loyalty of the individuals who were doing the importing. Like most protectionist polices, these began on an ad hoc, temporary basis. Consider, for example, the Mexican experience. Facing enormous pressure on its trade account, the Mexican government imposed quantitative restrictions on imports in 1947. At first, the restrictions only applied to "luxury goods," but a year later the Ministry of the National Economy was given the authority to increase the range of restricted goods—the only requirement being that it had to first consult with the Secretary of the Treasury to assess the impact of the restriction on government revenues. As a practical matter, this meant that manufacturers could lobby the executive branch of government, which could then, without the need to seek legislative approval, restrict the importation of competing products. During the 1950's, these mechanisms were used to obtain quotas on a wide variety of domestically produced goods. As soon as a new industry appeared, the government provided it with import quotas.[85] By 1956, 28

[83] Alan M. Taylor, "On the Costs of Inward-Looking Development: Price Distortions, Growth, and Divergence in Latin America," Journal of Economic History 58 (March 1998), pp. 1-28.

[84] Julio Berlinski, "International Trade and Commercial Policy," in Gerardo della Paolera and Alan M. Taylor, A New Economic History of Argentina (Cambridge: Cambridge University Press, 2003), p. 214.

[85] Enrique Cárdenas, "The Process of Accelerated Industrialization in Mexico, 1929-1982," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London:

percent of imports were limited by a system of import permits. The proportion of restricted goods grew to 65 percent in 1965, and to 74 percent in 1974.[86] Similar quantitative restrictions, with similarly ad hoc decree mechanisms, were created in Argentina and Chile.[87]

A third protectionist instrument that governments had at their disposal was the use of multiple exchange rates. Manufacturers could import necessary capital goods at special exchange rates that lowered the domestic currency cost of imported machinery and other inputs, but foreign-produced manufactured goods had to come into the country subject to an entirely different exchange rate that made competing imports look extremely expensive in local currency terms. Governments had similar latitude in determining the exchange rate for exports. In fact, governments used "exchange rate management" in any number of ways, depending on their goals at the moment: If they wanted to help exporters compete in foreign markets, they granted them a favorable exchange rate; If they wanted to tax exports in order to subsidize industry, then the government granted exporters an unfavorable exchange rate—and kept the difference between the

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Palgrave, 2000), p. 187. For detailed discussions of protectionism in the Mexican case see: Robert Bruce Wallace, Adriaan Ten Kate, Antonie Waarts, and Maria Delfina Ramírez de Wallace, La política de protección en el desarrollo económico de México (Mexico: Fondo de Cultura Económico, 1979); and Timothy King, Mexico : Industrialization and Trade Policies Since 1940 (London and, New York: Oxford University Press, 1970).

[86] Robert Bruce Wallace, Adriaan Ten Kate, Antonie Waarts, and Maria Delfina Ramírez de Wallace, La política de protección en el desarrollo económico de México (Mexico: Fondo de Cultura Económico, 1979), p. 94.

[87] Ricardo French Davis, Oscar Muñoz, José Miguel Benevente, and Gustavo Crespi, "The Industrialization of Chile during Protectionism, 1940-1982," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), pp. 130-31; Julio Berlinski, "International Trade and Commercial Policy," in Gerardo della Paolera and Alan M. Taylor, A New Economic History of Argentina (Cambridge: Cambridge University Press, 2003), p. 213; Carlos Díaz Alejandro, Essays on the Economic History of the Argentine Republic (New Haven: Yale University Press, 1970), p. 261.

international market-determined rate and the official exchange rate. In short, multiple exchange rate systems amounted to a set of complicated implicit taxes and implicit subsidies.

Once governments went down the road of "exchange rate management" there was no end. In Chile, to cite a notorious example, in 1952 there was a system of five multiple exchange rates, and three "free" exchange rates, as well as various combinations of both. The government board (CONDECOR) that oversaw this system, not only had the authority to determine exchange rates, it also had the power to ban outright specific imports or exports.[88] Argentina had a similar system of multiple exchange rates that were designed to subsidize industry by implicitly taxing agricultural exports. This was the Instituto Argentino para la Promoción de Intercambio (the Argentine Institute for the Promotion of Trade, IAPI), which was created in 1946. IAPI was anything but an export promotion institution. Instead the Argentine government nationalized all foreign trade, forcing it through IAPI. IAPI then taxed exporters and subsidized industrialists via a system of multiple exchange rates.[89] The use of multiple exchange rates, unlike tariffs and quantitative restrictions, waxed and waned. They were particularly popular in the 1940s and 1950s. Their use, under IMF pressure, subsided during the 1960s. In the late 1970s and 1980s, however, they made a comeback because they allowed governments to

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[88] Ricardo French Davis, Oscar Muñoz, José Miguel Benevente, and Gustavo Crespi, "The Industrialization of Chile during Protectionism, 1940-1982," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 130.

[89] Jorge Katz and Bernardo Kosacoff, "Import-Substituting Industrialization in Argentina, 1940-1980: Its Achievements and Shortcomings," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 286.

foment exports (and earn foreign exchange) without having to suffer the political consequences of major currency devaluation.

In the medium term, these policies spurred industrial development. In the three decades that followed World War II, Latin American GDP grew 5.6 percent per annum. Manufacturing outgrew the rest of the economy, increasing by 6.8 percent per year. Manufacturing as a share of total Latin American GDP therefore rose from 19 percent in 1945 to 26 percent in 1974—about the same share as in the United States.[90]

The growth of Latin American manufacturing during the post-war period was largely accomplished by the growth of firms that produced consumer-durables, such as household appliances and, most particularly, automobiles. This period also saw the flourishing of industries that produced construction goods, most notably steel, cement, and flat-rolled glass, in order to meet the demand of the region's rapidly growing cities. By the 1970s, the range of industrial production expanded even further, including basic petrochemicals, diesel trucks, and aluminum. Some countries, most notably Brazil and Argentina, even developed (with considerable government support) sizable armaments industries that produced low-cost, low tech aircraft, armored vehicles, and light weapons. This required, of course, the development of their machine tool and other capital goods industries.

It is not clear, however, that the increase in the *size* of Latin American industry necessarily translated into an increase in the *productivity* of Latin American industry. Clark Reynold's estimates for Mexico, for example, indicate that productivity growth in

[90] Data from Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp, "Introduction," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 16.

manufacturing during the period after 1940 was quite modest. Mexican industrial output increased at the rate of 8 percent per year from 1940 to 1950 and 7.3 percent per year from 1950 to 1960. But, the percentage of that output increase that was not accounted for by the growth of capital and labor was only 0.2 percent per year from 1940 to 1950 and 0.7 percent per year from 1950 to 1960.[91] Díaz Alejandro's estimates for Argentina point in the same direction. Except for tobacco, where productivity doubled from 1937-39 to 1959-62, labor productivity in the rest of Argentine industry stagnated. (See table 21).

The whole point of protectionism was to create distortions that favored manufacturers over other economic sectors. These distortionary policies—tariffs, quantitative restrictions, and multiple exchange rates—generated, however, unintended and perverse consequences. Governments tended to respond to these perverse outcomes with another round of ad hoc policies, which, in turn, gave rise to other unintended and perverse outcomes. Let us examine these briefly.

One of the outcomes of protectionism was that it exacerbated Latin America's balance of payments problem, rather than solving it. Governments embraced quantitative import restrictions and tariffs in the late 1940s because of the rapid dwindling of their foreign exchange reserves. In the short run, the strategy worked. Nobody had thought, however, about the consequences of the growth of consumer goods industries in the context of societies that had historically invested little in education and had little in the way of the social overhead capital. It soon became obvious that most capital goods—and in many industries a good deal of the intermediate goods—were going to have to be

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[91] Clark W. Reynolds, The Mexican Economy: Twentieth Century Structure and Growth (New Haven: Yale University Press, 1970), p. 166. Barbero and Rocchi obtain similar results for Argentina from 1935 to

imported. In the medium and long terms, this created, perversely, tremendous pressures on the balance of payments.

One solution to this problem was yet more trade protection—now on intermediate and some capital goods. These steps, of course, lowered the effective rate of protection on consumer goods. As a consequence, consumer goods manufacturers tended to fight against protection for capital goods industries.[92] Thus, it was necessary for policy makers to increase nominal rates of protection or increase quantitative restrictions on imports for consumer goods industries as well.

A second solution to the balance of payments problem was to increase export earnings. The only readily available mechanism to do that was to increase traditional exports—mineral and agricultural products. This meant that industrial development required the promotion of exports. In the long run, these might have been generated by exporting manufactured goods. In the short run, however, that was not an option—and the short run was the time horizon that mattered to governments. Once governments committed to short-run, ad hoc solutions to the balance of payments problem, the long run solution of creating manufacturing industries that were capable of exporting became less and less obtainable. The result was a set of policies that in the aggregate worked against one another: trade protection for consumer goods producers; trade protection for intermediate and capital goods producers; preferential exchange rates for the importers of capital goods; and preferential exchange rates for the exporters of agricultural and mineral products.

1954. María Inés Barbero and Fernando Rocchi, "Industry," in Gerardo della Paolera and Alan M. Taylor, A New Economic History of Argentina (Cambridge: Cambridge University Press, 2003), p. 274.

[92] Carlos Díaz Alejandro, Essays on the Economic History of the Argentine Republic (New Haven: Yale University Press, 1970), p. 259.

A second perverse consequence of protectionism was that it transferred rents from domestic consumers to multinational companies (MNCs). One of the features of trade protection is that it tends to be non-excludable: all producers are protected by the tariff wall. The response of foreign firms to protectionism was, therefore, to jump over the tariff wall by erecting local plants. This was a process that had begun in the 1920s, with the arrival of automobile assembly operations in Argentina, Brazil, and Mexico. By the 1950s, it was in full swing. Data from Argentina provides some sense of the overall process. Circa 1950 foreign direct investment (FDI) accounted for only 3 percent of total manufacturing investment. By the end of the decade, it accounted for almost 20 percent. Well over half of this investment was in the automobile industry.[93] The rest clustered in chemicals, farm machinery, electric motors, rubber, pharmaceuticals, plastics, and synthetic fibers. In fact, the only heavy industries not dominated by MNCs were steel and paper.[94] Data on MNC investment in Mexico yield similar—if more muted—results. As of 1959, 47 percent of U.S. FDI in Mexico was in manufacturing. In fact, virtually all of the growth of U.S. FDI in Mexico between 1950 and 1959 was in the manufacturing sector. The result was that in 1959 U.S. investors held claims on eight percent of total Mexican manufacturing investment.[95]

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[93] Jorge Katz and Bernardo Kosacoff, "Import-Substituting Industrialization in Argentina, 1940-1980: Its Achievements and Shortcomings," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 298-99.

[94] Paul H. Lewis, The Crisis of Argentine Capitalism (Chapel Hill: University of North Carolina Press, 1990), p. 299.

[95] Clark W. Reynolds, The Mexican Economy: Twentieth Century Structure and Growth (New Haven: Yale University Press, 1970), pp. 190-91.

MNC investment tended to cluster in particular industries where the advantages of foreign firms—their access to overseas capital markets and their knowledge of particular technologies—outweighed the advantages of domestic firms—their knowledge of local markets and their political connections. Not surprisingly, the end result, after a period of intense competition, was segmented markets: MNCs tended to completely dominate particular lines of manufacturing (automobiles, tires, office equipment, consumer electronics, pharmaceuticals), while being almost completely absent in others (textiles, clothing, leather goods, steel, cement, glass, household appliances).

Trade protection created a third set of unforeseen problems. Industrial technology tended to be designed for large and deep markets, such as those of Western Europe and the United States. Latin America's markets tended, however, to be small and shallow. This meant that Latin American manufacturing companies—including the MNCs—were going to be inefficient producers. Either they could employ technologies that were less efficient than the world standard, or they could employ the most efficient technologies but operate them at far less than capacity. Many producers chose the first option, purchasing second-hand machinery and outmoded product designs. Others chose the second option, employing world class facilities that they operated at far less than the minimum efficient scale of production. Both choices implied that Latin American firms produced at a higher cost than those elsewhere. The latter choice also implied that the structure of the market would be characterized by monopoly or oligopoly. The net result of both sets of choices was that consumers paid higher prices for manufactured products than they would have under free trade.

One of the reasons for the presence of MNCs in much of heavy industry was the lack of adequate banking systems and securities markets to mobilize domestic capital. The lack of adequate financial systems had plagued Latin American industry since the pre-1914 period. Over time, as the scale and cost of industrial technology increased, these problems grew increasingly severe. Though there was a good deal of variation from country to country, the basic pattern was that Latin American countries tended to be under-banked and tended to have small and thin securities markets.[96] Under-banking tended to be a product of explicit government policies designed to repress financial development as a means of subsidizing the fisc (banks could only obtain charters from central governments, central governments kept the number of charters low and required high reserve ratios, and then required banks to hold much of their reserves in the form of government bonds).[97] Thin securities markets tended to be a product of the fact that bondholders had little protection in the case of bankruptcy, and that there was little in the way of external auditing of public companies in Latin America until the late 1970s—when the largest firms started borrowing money from foreign banks, who demanded audited financial statements. Until that point, stockholders had little to go in making investment decisions other than the firm's past record of dividend payments and the reputation of the firm's principals. On top of this, high inflation, particularly in the Brazilian and Argentine cases, but elsewhere as well, made the evaluation of a firm's

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[96] For a detailed study of the Mexican case: see, Gustavo del Angel, "Paradoxes of Financial Development: The Construction of the Mexican Banking System, 1941-1982" (Ph.D. Dissertation, Stanford University, 2002). For a general discussion of the thinness of Latin American Financial Systems see: Ross Levine, "Bank-Based or Market Based Financial Systems: Which is Better," Journal of Financial Intermediation 11 2002), pp. 1-30.

[97] For a discussion of financial repression see: Ronald McKinnon, Money and Capital in Economic Development (Washington, D.C.: Brookings Institution, 1973).

financial statements difficult, even had there been other protections for shareholders. Not surprisingly, very few firms could actually sell shares to the public.

Latin American governments could have addressed these problems by rewriting securities laws, by creating a stable macroeconomic environment, by making it easier to obtain a bank charter, and by reducing reserve requirements for banks. Those choices, however, all came with short run political costs, which public officials did not want to bear. Governments therefore addressed the problem of inadequate financial intermediation by creating intermediaries of their own, which took the form of government-owned industrial finance banks. The first of these was Chile's Instituto de Crédito Industrial, established in 1928 (later enlarged into the Corporación de Fomento de la Producción in 1939). Mexico soon followed suit with the creation of Nacional Financiera in 1934. Virtually every other country with substantial industry soon created similar banks, such as Argentina's Banco de Crédito Industrial (founded in 1944), and Brazil's Banco Nacional de Desenvolvimento Econômico (founded in 1952).

These government banks were supposed to lend to small and medium sized firms. As a practical matter, however, they tended not to do so. The political pressure to lend to large firms, which tended to have large, unionized, and politically organized labor forces, simply outweighed whatever original mandate the banks may have had. This was particularly the case in Mexico, but was true in other countries as well.[98] As Noemi

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[98] Enrique Cárdenas, "The Process of Accelerated Industrialization in Mexico, 1929-1982," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 190.

Girbal Blacha's work on Argentina's Banco de Crédito Industrial and Banco Nacional makes clear, virtually all the bank's capital was allocated to large firms.[99]

Latin America's industrial development banks did more, however, than make loans. They also took equity stakes in firms. In theory, this is not necessarily a bad thing to do. The problem was that, in practice, they tended to invest a disproportionate share of their resources in large firms that lost money. In Mexico, for example, Nacional Financiera typically took a minority shareholder position in companies to which it was also making loans. If the firm performed well, Nacional Financiera's stake would, over time, become purely nominal. If the firm performed badly, however, Nacional Financiera typically bought out the other shareholders. From the point of view of the government, many of these enterprises were simply too big to fail, or had unionized workforces who were politically crucial. This policy of bail outs not only prevented the bank from deploying its capital more effectively elsewhere, it also encouraged moral hazard: knowing that they would be bailed out, manufacturers undertook enterprises of doubtful profitability. [100]

The relentless logic of subsidies ultimately produced government ownership of a wide range of manufacturing industries, financed of course through government development banks. Government ownership tended to cluster in the production of so-called strategic goods, such as steel, basic petrochemicals, and fertilizers. Government ownership in these industries was rationalized on the basis that these were high risk,

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[99] Noemi Girbal-Blacha, "Viejos actores, nuevas functiones: Bancos y crédito al la producción e la Argentina, 1946-1955." Paper presented at the XIII Congreso de la Asociación Internacional de Historia Económica (Buenos Aires).

[100] Enrique Cárdenas, "The Process of Accelerated Industrialization in Mexico, 1929-1982," in Enrique Cárdenas, José Antonio Ocampo, and Rosemary Thorp eds., An Economic History of Twentieth Century

capital intensive industries characterized by large minimum efficient scales of production and capital indivisibilities. While this is true, it was also the case that these firms tended to produce inputs for other industries. Given the fact that there were no private shareholders, the prices of the firms' outputs were determined on political grounds: government-owned firms wound up charging below market prices. In other words, taxpayers subsidized the privately-owned enterprises that purchased the steel, electricity, chemicals, and other inputs produced by so-called parastate firms.

By the late 1960s and early 1970s, it was becoming increasingly clear that protectionism and "state-led development" had created endless distortions. Consumers paid high prices for badly made goods. Entrepreneurs found it difficult to evaluate projects and make investment decisions, because so much of their calculus turned on political, rather than market, signals. Governments were providing increasingly larger subsidies, via the exchange rate system, government banks, and parastate firms—and the benefits of many of those subsidies were being captured by foreign-owned manufacturing firms.

By the 1970s, Latin America's governments were faced with a set of hard decisions: end subsidies and market distortions by opening up to foreign trade, or take advantage of the boom in international capital markets in order to subsidize a system that had run into decreasing marginal returns. With the notable exception of Chile, governments throughout Latin America, "democratic" and authoritarian alike, opted to buy time by borrowing abroad. The outcome of that experience is well known: the debt crisis of the 1980s not only produced an economic and social disaster, it brought about a

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Latin America, Volume III: Industrialization and the State in Latin America, The Postwar Years (London: Palgrave, 2000), p. 195.

dissolution of the political coalitions that had supported protectionism and subsidization since the 1890s. The result was the end of trade protection, the privatization of government-owned firms, and the shifting of Latin American manufacturing increasingly toward export markets.

Conclusions:

Beginning in the 1890s the largest economies of Latin America conducted a 100-year experiment in which they built tremendous manufacturing sectors behind barriers to trade. This experiment was not carried out because public officials were ideologically committed to industrialization or because of economic theories that challenged free trade. Indeed, the growth of large scale manufacturing industry pre-dated structuralist theories by 60 years. Rather, Latin America's industrialization was kick started by an endogenous process of economic development whose roots were found in the growth of the so-called export economy. Once industrialists got a foothold they lost no time in seeking tariff protection. Governments granted this protection because it came at virtually no political cost: the one class that stood to lose from trade protection, consumers, had no political voice. The result was that by 1914 all of the larger countries of Latin America had become increasingly protectionist, and were undergoing a rapid process of industrial growth.

The next six decades brought (long) periods of prosperity and (short) periods of morbidity. Over the long term, however, industry outgrew the rest of the economy. Circa 1975, when this style of industrial development had reached its zenith, the manufacturing sector's share of Latin American GDP was comparable to that in the United States.

Over time, governments played increasingly larger roles in the process of industrial growth. They devised increasingly complicated systems designed to simultaneously tax imported manufactures and subsidize the cost of imported inputs to the production of those goods. They also became financiers, partners, and even direct owners of manufacturing firms.

This does not mean, however, that Latin American post-1950 industrial development was "state led" or that it was somehow fundamentally different from the industrial growth of the pre-1950 period. The process of Latin American industrial development was always ad hoc. Governments did not grant trade protection because they were committed to a particular vision of industrial development. They did it because they were rewarding politically powerful constituents, some of whom were industrialists and some of whom were industrial unions. They also did it because balance of payments crises often presented them with difficult political choices: suffer the negative fallout of devaluation (whose effects are obvious and immediate), or impose restraints on trade (whose effects are more difficult to detect, and understand, for the average voter). Similarly, governments did not create industrial finance banks and buy equity in manufacturing firms because they had some ideological commitment to government ownership. They did it because government financial policies repressed the development of banking systems and securities markets that could mobilize adequate capital for industrial development. Charting a different course in terms of financial market regulation would have come at sizable short-run political and economic costs: governments would have had to adhere to stable fiscal policies, create independent central banks, and undo the segmented monopolies and oligopolies that characterized

Latin American banking. Governments therefore chose the second-best solution of government financing of private firms. Once this started, however, government loans became like trade protection: it was a permanent prize to be captured. Finally, governments did not become direct owners of manufacturing firms because public officials were convinced of the superiority of state ownership. They did it because many private firms, especially ones that the government had lent money to, were simply too big to fail. In short, governments increasingly intervened in support of industry because it was in the self interest of industrialists, industrial unions, and public officials to do so. This was an outcome of the ad hoc nature of Latin American industrial development, not the product of carefully thought out plans or strategies. This was as true of Latin America's industrial development from 1890 to 1950 as it was from 1950 to 1980.

Table 1
Size Estimates of the Cotton Textile Industries of Brazil, Mexico
India, and the United States (in Spindles), 1850-1934

YEAR	MEXICO	BRAZIL	INDIA	U.S.A.
Circa 1850	135,538			
Circa 1865	154,822	14,875	285,524	
Circa 1875		45,830	886,098	
Circa 1880	249,294	84,956		10,653,435
Circa 1885-90	277,784	78,908	2,145,646	
Circa 1895	411,090	260,842		14,384,180
Circa 1900	588,474		4,945,783	19,436,984
Circa 1905	678,058	778,224		
Circa 1910	702,874	823,343	6,357,460	28,178,862
Circa 1914	752,804	1,634,449		
Circa 1921	770,945	1,621,300	6,763,036	34,603,471
Circa 1927	821,211	2,692,077		
Circa 1930-34	803,873	2,507,126	9,124,768	33,009,323

Sources;
Stephen Haber, “Banks, Financial Markets, and Industrial Development: Lessons from the Economic Histories of Brazil and Mexico,” in Anne O. Krueger ed., Latin American Macroeconomic Reform: The Second Generation (The University of University of Chicago Press, 2003).

Table 2
Mexican Textile Imports and Domestic Production

Year	Nominal Value Output[a]	Declared Value Imports[a]	Total Consumption	Domestic Production as Percent of Consumption
1889	10,909	4,675	15,584	70%
1891	12,066			
1893	19,064	3,079	22,143	86%
1895	23,554	4,032	27,586	85%
1896	23,658	5,495	29,153	81%
1899	29,753	5,448	35,201	85%
1900	35,459	5,315	40,774	87%
1901	33,877	4,028	37,905	89%
1902	28,780	3,032	31,812	90%
1903	36,907	3,164	40,071	92%
1904	42,511	2,537	45,048	94%
1905	51,214	2,565	53,779	95%
1906	51,171	2,951	54,122	95%
1907	51,686	3,519	55,205	94%
1908	54,934	3,894	58,828	93%
1909	43,370			
1910	50,651	1,059	51,710	98%
1911	51,348	1,253	52,601	98%

[a] Output reported in thousands.

Source: Haber, Razo, and Maurer 2003; Colegio de Mexico, Estadisticas Historicas, p. 224.

Table 3
Capacity, Output, and Value of Physical Plant in Fundidora Monterrey
(Mexico's Steel Monopolist), 1903-1929

Year	Capacity[a]	Output[b]	Capacity Utilization (Percent)	Value of Physical Plant[c]
1903	110	22	20%	8,388
1904	110	36	33%	9,236
1905	110	4	4%	9,833
1906	110	25	23%	10,032
1907	110	16	15%	9,526
1908	110	17	15%	9,082
1909	110	59	54%	9,317
1910	110	45	41%	9,365
1911	110	71	65%	9,087
1912	110	33	30%	9,337
1913	110	12	11%	9,226
1914	110	0	0%	8,989
1915	110	0	0%	8,509
1916	110	0	0%	8,161
1917	110	12	11%	7,819
1918	110	21	19%	7,830
1919	110	21	19%	7,374
1920	110	15	14%	9,133
1921	110	42	38%	10,421
1922	110	24	22%	10,217
1923	110	44	40%	10,238
1924	110	19	17%	10,340
1925	110	49	45%	9,872
1926	110	62	56%	9,700
1927	110	41	37%	9,436
1928	110	51	46%	9,173
1929	110	60	55%	8,679

[a]Capacity of the blast furnace, in thousands of metric tons.
[b]Output of the blast furnace, in thousands of metric tons.
[c]Book value of the physical plant (land, equipment, buildings), net of depreciation in thousands of pesos. Physical plant depreciated at flat rate of five percent per annum.

Source: Calculated from Compañía Fundidora de Fierro y Acero de Monterrey (1900-1930).

Table 4: The Mexican Cigarette Industry, Output and Investment, 1899-192

Year	Factories	Production Thousand of Kilos	Imports Thousand of Kilos	Domestic Production as % Consumption	Capital Invested Nominal Pesos	Value of Output Nominal Pesos	Number of Workers
1899	766	4,916	20	100%			
1900	766	5,907	15	100%			
1901	740	5,974	18	100%			
1902	701	6,203	16	100%			
1903	670	7,305	19	100%			
1904	605	7,724	21	100%			
1905	469	8,174	25	100%			
1906	491	8,456	28	100%			
1907	479	8,856	33	100%			
1908	469	8,904	23	100%			
1909	437	8,661					
1910	451	8,451	19	100%			
1911	341	8,380	15	100%			
1923	169	10,202			19,457,999	26,174,851	4990
1924	207	7,830			19,668,424	24,062,005	4766
1925	197	9,020			19,948,643	28,536,637	5905
1926	163	9,546			22,435,177	29,124,007	5201
1927	143	10,649			23,123,888	31,174,424	5051
1928	127				26,639,540	30,551,504	4685

Sources: Haber (1989), p. 49; México. Departamento de *Estadística Nacional*, Sept. 1928; México. Departamento de Estadística Nacional, February 1930.
Colegio de Mexico, Estadisticas Economicas, p. 221.

Table 5
Bottled Beer Production and Consumption in Mexico, 1891-1910

Year	Beer Imports Barrelled 1000 KG	Beer Imports Bottled 1000 KG	Total Imports 1000 KG	Cerveceria Cuahtemoc Production 1000 KG	Estimated National Production 1000 KG	Imports as % of Cuahtemoc Plus Imports	Imports as % of National Consumption
1888	309	1,885	2,194				
1889	270	2,693	2,963				
1890							
1891							
1892	339	1,991	2,330				
1893	240	1,019	1,259				
1894	273	906	1,179				
1895	214	991	1,205				
1896	166	895	1,061				
1897	99	573	672				
1898	222	531	753				
1899	344	491	835				
1900	473	579	1,052	4,866	17,379	18%	6%
1901	497	704	1,201	4,685	16,732	20%	7%
1902	448	644	1,092	5,581	19,932	16%	5%
1903	419	778	1,197	5,925	21,161	17%	5%
1904	454	691	1,145	6,865	24,518	14%	4%
1905	59	641	700	8,884	31,729	7%	2%
1906	109	716	825	13,344	47,657	6%	2%
1907	96	678	774	14,005	50,018	5%	2%
1908				11,183	39,939		
1909	29	518	547	11,582	41,364	5%	1%
1910	29	531	560	13,275	47,411	4%	1%

1. Cuahtemoc production converted from liters to kilos at one kilo per liter.

Source: Haber, Razo, and Maurer 2003, p. 163;
Colegio de Mexico, Estadisticas Economicas, p. 207-08.

Table 6
Capacity and Output in the Mexican Cement Industry
(in Thousands of Metric Tons)

Year	Capacity	Output	Capacity Utilization
1906	66	20	30%
1907	66	30	45%
1908	66	40	61%
1909	86	50	58%
1910	151	60	40%
1911	152	50	33%
1912	177	40	23%
1913	177	30	17%
1914	177	25	14%
1915	177	10	6%
1916	177	20	11%
1917	177	30	17%
1918	177	40	23%
1919	177	40	23%
1920	222	45	20%
1921	222	50	23%
1922	222	70	32%
1923	222	90	41%
1924	222	107	48%
1925	222	110	50%
1926	222	151	68%
1927	222	158	71%
1928	246	204	83%
1929	291	158	54%

Source : Haber (1989), fn. 29, and pp. 41, 127, 165, 177

Table 7

The Growth of Argentine Industry, 1895-1974

Year	Number of Establishments	Number of Workers	Installed Horsepower	Workers per Establishment	Horsepower per Worker
1895	24,114	174,782	30,033	7.2	0.2
1913	47,343	363,771	237,817	7.7	0.7
1935	37,362	437,816	1,026,086	11.7	2.3
1937	45,263	539,525	1,190,493	11.9	2.2
1939	49,100	581,599	1,423,872	11.8	2.4
1941	52,445	684,497	1,645,041	13.1	2.4
1943	59,765	820,470	1,836,453	13.7	2.2
1946	84,905	1,058,673	2,076,531	12.5	2.0
1950	81,599	1,035,765	2,661,922	12.7	2.6
1954	148,371	1,217,844	3,570,037	8.2	2.9
1964	190,892	1,370,483	5,115,913	7.2	3.7
1974	126,388	1,525,221	6,753,375	12.1	4.4

Source: Paul Lewis, The Crisis of Argentine Capitalism
(Chapel Hill: University of North Carolina Press, 1990), pp. 36, 37,299.

Table 8

Merchandise Imports as a Percentage of the Value of Gross Domestic Production Plus Imports

	1900-04	1925-29	1937-39	1946-49	1950-54	1955-59	1960-61
Manufacturing		34	22	15	10	9	11
Foodstuffs and Beverages			5	2	2	2	2
Tobacco			11	7	2	0	1
Foodstuffs, Beverages, and Tobacco	6	5					
Textiles			44	15	8	5	4
Clothing			3	3	1	0	0
Textiles and Clothing	55	45					
Wood Products	39	37	32	18	16	16	17
Paper and Cardboard	25	31	40	30	21	17	18
Chemicals and Pharmaceutical Products	45	38	40	19	14	14	15
Petroleum Refining	100	53	16	22	16	14	10
Rubber Products	100	93	12	22	12	14	18
Stone, Glass, and Ceramics	15	27	18	9	8	3	3
Metals	87	65	46	37	25	21	22
Machinery, Vehicles, and Equipment[1]	92	79	49	43	29	23	25
Electrical Machinery and Appliances	100	98	56	22	21	8	9
Other		49	41	31	17	18	20

1. Excludes Electrical

Source: Diaz Alejandro 1970, p. 210, 232.

Table 9
Ad Valorum and Effective Rates of Protection on Select Manufactures, Mexico, 1890 and 1905

	Ad Valorum Tariffs		Effective Protection		Date of
	1890	1905	1890	1905	First Firm*
Beer, unbottled	59	112	85	160	1865
Beer, bottled	76	52	192	133	1865
Cigarettes	41	77	23	51	Early 1800s
Leather	140	210	385	787	
Soap	173	143			1883
Boots	111	98	128	23	1898
Shoes	33	38	-65	-128	1898
Burlaps Sacks	0	53			1892
Cordage	0	28	-227	102	1896
Cotton Cloth, coarse	87	55	163	103	1830s
Cotton Cloth, fine	106	76	207	150	1830s
Paper	49	127	115	296	1890
Glass, flat	255	53			1909
Dynamite	0	11			1901
Bricks	13	20			
Cement	0	30			1906
Average for Consumer and Light Industry	79	76	107	150	
Petroleum Refining	49	21	169	-187	
Iron and Steel Industry					
Pig Iron	0	62	0	221	1900
Iron Bars	61	34	151	34	
Iron Hoops	157	91	426	199	
Steel Bars and Rods	60	31	149	27	1900
Steel Sheets and Plates	41	85	94	181	1900
Steel Rails	0	36	-23	41	1900
Structural Iron and Steel	24	30	46	24	1900
Wire	10	56	6	99	
Nails, cut	152	136	412	327	

Source: Edward Beatty, "Commercial Policy in Porfirian Mexico: The Structure of Protection," in Jeffrey Bortz and Stephen Haber eds., The Mexican Economy, 1870-1930: Essays on the Economic History of Institutions, Revolution, and Growth (Stanford University Press, 2002) p. 222.

Table 10

Argentine Import Duties as Percentage of the Real Value of Imports Subject to Duties

Years	
1906-09	29.7
1910-14	25.8
1915-19	14.9
1920-24	14.9
1925-29	23
1930-34	32
1935-39	31.1
1940	21.5

Source: Argentina, Diaz Alejandro (1970), chapter 5.

Table 11
Brazilian Industrial Machinery Imports, 1900-1939[a]

Year	Textile Machines	Index 1913=100	Total Industrial Machinery[1]	Index 1913=100
1900	126,743	22	535,963	19
1901	96,266	17	410,308	14
1902	170,822	30	509,999	18
1903	175,434	30	582,390	20
1904	222,508	39	738,712	26
1905	161,262	28	891,185	31
1906	201,017	35	1,136,843	40
1907	405,519	70	1,591,120	56
1908	421,303	73	1,457,111	51
1909	388,217	67	1,476,458	52
1910	423,990	73	1,733,234	61
1911	503,017	87	2,222,300	78
1912	667,605	116	2,963,600	104
1913	577,919	100	2,857,718	100
1914	172,874	30	1,157,885	41
1915	100,684	17	337,491	12
1916	113,612	20	375,121	13
1917	102,091	18	487,195	17
1918	122,520	21	424,971	15
1919	140,964	24	794,953	28
1920	131,674	23	1,271,030	44
1921	385,041	67	1,607,563	56
1922	583,579	101	1,453,184	51
1923	439,932	76	1,322,218	46
1924	634,953	110	1,939,346	68
1925	1,039,711	180	2,609,991	91
1926	638,609	111	2,167,597	76
1927	546,863	95	2,144,788	75
1928	517,749	90	2,281,960	80
1929	408,474	71	2,863,740	100
1930	215,078	37	1,605,285	56
1931	208,576	36	703,717	25
1932	246,965	43	777,451	27
1933	355,360	61	1,242,563	43
1934	435,122	75	1,543,216	54
1935	536,892	93	1,929,352	68
1936	605,101	105	1,925,418	67
1937	709,731	123	2,412,365	84
1938	811,770	140	2,836,861	99
1939	507,433	88	2,428,693	85

a. Exports of industrial machinery from Great Britain, the United States, France and Germany to Brazil, converted to real pounds sterling.

Source: Suzigan, 1986, pp. 360-64.

Table 12
Estimates of Rates of Return to the Brazilian Cotton Textile Industry[1]
(Divisia Index of all Firms Listed on the Rio de Janeiro and Sao Paulo Exchanges)

Year	Nominal Rate of Return on Equity	Real Rate of Return on Equity	Real Financial Returns to Shareholders	Real Financial Returns to Stock and Bondholders
1900	9.8	3.7	15.1	18.6
1901	1.7	0.8	2	20.1
1902	9.8	4.8	55.4	21.6
1903	8	4.1	16.1	9.1
1904	15.2	8.6	-4.3	9.6
1905	10.1	6.8	10.3	26.8
1906	6.9	2.4	8.3	0.5
1907	10	6.1	12.4	2.5
1908	6.9	4.2	-12.8	2.8
1909	5.7	4.4	0.2	16.7
1910	7.2	5.1	8.5	8.2
1911	12.7	8.1	5.8	1.9
1912	7.7	5.1	-9.5	-4.5
1913	6.3	4.5	-6.5	9.6
1914	3.3	3.2	-1	15.5
1915	10.5	4.2	-24.2	-7.7
1916	6.9	4.7	-8.1	-15.5
1917	7.5	4	-1.3	-3.1
1918	12.3	5.3	8.7	2.3
1919	7.1	4	-5.6	-3.1
1920	12.9	7.1	-6.4	-8.8
1921	3.1	2.1	11.2	17.7
1922	10.9	5.9	21.2	-0.2
1923	14.6	6.9	-15.6	-17.8
1924	8	3.9	-5.3	-4.1
1925	2.7	2.6	-17.4	-15.1
1926	4.5	2.8	4.8	21.8
1927	2.7	1.9	0.5	4.6
1928	2.9	1.2	-5.4	-9.2
1929	-2	-0.1	-12.2	2.7
1930	-1.3	-0.6	-4.3	10.9
1931	1.7	1.3	12.4	12.3
1932	3.7	2.2	1.5	1.7
1933	4.6	2.7	3.4	5.5
1934	-4	-0.3	6.8	-9.5
1935	1.9	0.5	3.1	-2.7
1936	-14	-4.7	2.7	-16.2
1937	3.9	1.5	-0.4	-6.2
1938	4.1	1.8	-3.8	0
1939	1.8	0.6	-7.1	0.8

Table 12 Continued

1. The nominal and real rate of return on owner's equity treat profits as the book value of income owned by shareholders divided by the book value of capital owned by shareholders. Income is calculated as dividends plus directors fees plus changes in reserve accounts. Capital is measured as the value of reserve accounts plus the par value of outstanding shares.
Real financial returns to stockholders and real financial returns to stock and bondholders treat profits as the market value of financial returns to stockholders or to stock and bondholders divided by the market value of those investments. In calculating financial profits to shareholders, income is measured as changes in the real market value of stock plus real dividends, and capital is measured as the real market value of stock. In calculating financial profits to stock and bondholders, we assume that investors hold a portfolio of stocks and bonds (weighted by their market capitalization).

Sources: Calculated from data in Jornal do Commercio and O Estado de Sao Paulo.

Table 13
Exports of Manufacturing Machinery from the United States and United Kingdom to Mexico, in 1929 U.S. Dollars

Year	Total Manufacturing Machinery	Index 1913=100	Textile Machinery	Index 1913=100
1900	734,770	51	468,115	1,806
1901	402,167	28	183,564	708
1902	386,609	27	248,021	957
1903	521,033	36	147,243	568
1904	789,190	55	395,789	1,527
1905	890,938	62	265,632	1,025
1906	1,158,405	80	354,592	1,368
1907	1,474,894	102	471,916	1,821
1908	1,441,350	100	472,963	1,825
1909	1,154,146	80	525,028	2,025
1910	1,017,436	71	349,919	1,350
1911	1,372,511	95	331,188	1,278
1912	1,111,385	77	391,488	1,510
1913	1,442,572	100	25,922	100
1914	300,418	21	6,274	24
1915	115,660	8	3,405	13
1916	428,426	30	8,521	33
1917	895,278	62	35,552	137
1918	1,543,712	107	85,800	331
1919	2,891,556	200	164,364	634
1920	4,960,427	344	457,035	1,763
1921	4,056,181	281	138,966	536
1922	2,779,865	193	1,112,938	4,293
1923	2,050,045	142	595,872	2,299
1924	2,011,632	139	634,439	2,447
1925	2,699,575	187	916,903	3,537
1926	7,298,838	506	1,111,451	4,288
1927	6,604,369	458	1,066,284	4,113
1928	6,263,526	434	1,123,659	4,335
1929	8,615,809	597	680,932	2,627
1930	8,179,263	567	643,881	2,484
1931	1,089,077	75	426,688	1,646
1932	546,913	38	163,623	631
1933	957,090	66	415,211	1,602
1934	1,421,132	99	532,113	2,053
1935	1,778,275	123	694,107	2,678

Note: Price deflator is wholesale price index found in Carter and United States Bureau of the Census (1997), Series E40-51.

Sources: United States: United States. Department of Commerce, 1902-1930.
United Kingdom: United Kingdom. Customs and Excise Dept. Statistical Office, 1900-1934

Table 14
Domestic Output as Percent ot Total Consumption, Brazilian Steel Industry

	Pig Iron Production		Steel Ingot Production		Rolled Steel Products	
Year	Tons	As % of Consumption	Tons	As % of Consumption	Tons	As % of Consumption
1920	14,065	67		0		0
1921	17,747	94		0		0
1922	17,783	85		0		0
1923	25,187	83		0		0
1924	25,035	60	4,492	38		0
1925	30,046	72	7,559	54	283	0
1926	21,299	57	9,875	62	10,501	4
1927	15,353	87	8,205	56	16,638	4
1928	25,761	91	21,390	74	26,227	5
1929	33,707	88	26,842	75	29,898	6
1930	35,505	95	20,985	85	25,895	10
1931	28,114	98	23,130	93	18,892	13
1932	28,809	97	34,192	94	29,547	18
1933	46,774	98	53,567	95	42,369	15
1934	58,559	99	61,675	94	48,699	14
1935	64,082	99	64,231	93	52,358	15
1936	78,419	98	73,667	92	62,946	16
1937	98,101	99	76,430	89	71,419	14
1938	122,352	99	92,420	91	85,666	24
1939	160,016	100	114,095	94	100,996	24
1940	185,570	100	141,201	96	135,293	31

Source: Baer (1969), p. 61.

Table 15
Output and Consumption of Dynamite, Mexico, 1918-1929

Year	Output Thousands of Kilograms	Consumption Thousands of Kilograms	Production as Percent of Consumption
1918	301,644	285,519	106%
1919	776,223	585,711	133%
1920	646,698	741,114	87%
1921	706,709	565,004	125%
1922	571,604	647,242	88%
1923	586,573	633,362	93%
1924	535,747	721,428	74%
1925	1,221,870	1,202,653	102%
1926	1,424,524	1,463,975	97%
1927	3,182,704	3,072,732	104%
1928	4,766,470	4,671,643	102%
1929	5,759,625	5,620,138	102%

Source: Haber, Razo, and Maurer 2003.

Table 16
Power Generated by the Mexican Light and Power Company for Commercial Purposes

(in Thousands of Kilowatt Hours)

Year	Thousands of Kilowatt Hours	Index (1910=100)
1907	45,779	80
1908	44,061	77
1909	47,074	82
1910	57,112	100
1911	59,244	104
1912	67,565	118
1913	62,117	109
1914	56,274	99
1915	39,096	68
1916	42,888	75
1917	67,062	117
1918	72,901	128
1919	82,212	144
1920	91,145	160
1921	88,379	155
1922	103,111	181
1923	113,704	199
1924	125,424	220
1925	144,230	253
1926	166,483	292
1927	178,089	312

[a]Does not include municipal lighting.
Source: Haber, Razo, and Maurer (2003).

Table 17

Argentine Industrial Firms in 1946

Period of Founding	Percentage of Establishments	Percentage of Workers	Percentage of Output By Value	Relative Output Per Firm (Percent Output Divided by Percent of Establishments)
Before 1871	0.3	1.7	2.0	6.67
1871-90	1.4	6.4	6.8	4.86
1891-00	2.1	6.8	7.8	3.71
1901-10	4.6	10.5	10.1	2.20
1911-20	8.9	12.5	14.2	1.60
1921-30	19.7	18.7	20.5	1.04
Subtotal (Before 1931)	37.0	56.6	61.4	1.66
1931-40	32.5	25.6	25.2	0.78
1941-46	29.1	15.2	11.4	0.39
Subtotal (1931-46)	61.6	40.8	36.6	0.59
Unknown	1.4	2.5	2.0	1.43

Source: Calculated from Paul Lewis, The Crisis of Argentine Capitalism (Chapel Hill: University of North Carolina Press, 1990), p. 40.

Table 18

Classification of Industrial Establishments According to Year of Founding
(Percentages of Gross Output in 1948 of each time period for each category)

	Before 1901	1901-10	1911-20	1921-30	1931-40	1941-48	**Subtotal Before 1931**
Tobacco	12	3	41	42	1	2	**97**
Gas and Electricity	62	11	6	6	13	2	**85**
Printing and Publishing	34	13	16	12	15	10	**75**
Petroleum Refining	0	0	18	56	23	3	**74**
Food and Beverages	23	14	17	19	16	10	**72**
Paper and Cardboard	26	4	9	21	27	13	**60**
Vehicles and Machinery	13	9	16	22	19	15	**60**
Metals	12	14	13	19	20	21	**57**
Chemicals	8	9	14	26	19	24	**57**
Clothing	13	10	14	17	25	20	**54**
Electrical Machinery and Appliances	1	22	12	17	19	29	**52**
Leather Products	18	7	10	13	23	26	**49**
Stone, Glass, and Ceramics	15	5	10	17	28	24	**46**
Other Manufacturing	8	7	8	22	26	28	**45**
Wood Products	8	8	10	17	24	33	**43**
Textiles	16	4	7	15	34	22	**42**
Rubber Products	4	2	7	23	55	10	**35**

Source: Diaz Alejandro 1970, p. 242.

Table 19

Foreign Investment in Latin America as a Percent of GDP

	Year							
Country	1900	1914	1929	1938	1950	1970	1980	1990
Argentina	4.15	2.6	1.12	0.87	0.12	0.14	0.23	0.64
Brazil	2.55	2.96	0.92	0.7	0.18	0.17	0.32	0.36
Chile	1.88	2.11	1.56	1.63	0.49	0.38	0.27	0.4
Colombia	0.74	0.27	0.34	0.35	0.24	0.19	0.13	0.21
Mexico	1.55	1.83	1.28	0.79	0.17	0.12	0.23	0.32
Peru	1.78	1.21	0.64	0.46	0.22	0.22	0.32	0.48
Uruguay	3.14	1.62	0.67	0.59	0.18	0.13		0.31
Venezuela	2.52	0.98	1.05	0.73	0.55	0.36	0.32	0.47

Source: Alan M. Taylor, Latin America and Foreign Capital in the 20th Century, in Stephen Haber ed., Political Institutions and Economic Growth in Latin America: Essays in Policy, History, and Political Economy (Stanford: Hoover Insitution Press, 2000), p. 129.

Table 20

Nominal Rates of Protection, Circa 1960

Country	Consumer Non-Durables	Consumer Durables	Semi Manufactures	Industrial Raw Materials	Capital Goods
Argentina	176%	266%	95%	55%	98%
Brazil	260%	328%	80%	106%	84%
Chile	328%	90%	98%	111%	45%
Colombia	247%	108%	28%	57%	18%
Mexico	114%	147%	28%	38%	14%
Uruguay	23%	24%	23%	14%	27%
EEC	17%	19%	7%	1%	13%

Source:
Alan M. Taylor, "On the Costs of Inward Looking Development: Price Distortions, Divergence, and Growth in Latin America," Journal of Economic History 58 (March 1998), pp. 1-28.

Table 21

Indices of Gross Output per Employed Worker in Traditional Branches of Argentine Manufacturing (includes owners and family members)

Year	Foodstuffs & Beverages	Tobacco	Textiles	Clothing	Wood Products	Leather Products	All Manufacturing
1937	117	90	99	138	161	86	123
1939	121	99	103	137	140	108	125
1943	100	100	100	100	100	100	100
1946	86	111	108	100	109	88	93
1950	102	128	92	144	145	92	118
1957	121	182	86	122	170	86	146

Source: Diaz Alejandro 1970.