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Financing the Development of Foreign-Owned Electrical Systems in the Americas, 1890-1929: First Steps in Comparing European and North American Techniques

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Networked electric systems spread across the globe early in the twentieth century. The process was led largely by groups of free-standing companies, or clusters of companies, based primarily in Europe (Germany, Belgium, Italy, Spain, Great Britain, France) and North America (Canada and the United States). In this paper I compare the several European patterns with those of North America in financing and organizing foreign utilities. The focus will be on the ways in which three forms of investment—the European industrial bank, the Canadian financial syndicate, and the US holding company—addressed different challenges in the process of foreign direct investment over time.

The entrepreneurial and econo-technical forces that brought large-scale electrical systems into being during the last decade of the nineteenth century and the first decade of the twentieth century have been much studied.[1] Standing behind these activities, making them possible, was a separate sphere of activity and considerably less studied set of actors in the realm of finance. The emergent electrical systems required large amounts of capital, perhaps not as much as railroads had, but certainly a great deal

[1] In different ways and over several generations, see for example: Forest McDonald, *Insull* (Chicago, 1962), Thomas Hughes, *Networks of Power* (Baltimore, 1983), Bernard Carlson, *Innovation as a Social Process* (New York, 1991), David Nye *Electrifying America* (Cambridge, Mass., 1992) and Harold Platt, *The Electric City* (Chicago, 1991).

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more than most industrial enterprises. Big-ticket items such as thermal power stations, hydroelectric dams, turbines, and generators, were only the most obvious manifestations of this capital intensity. In Sao Paulo, for example, the hydroelectric project on the Tietê River cost only about 10 percent of the $4 million initially invested in the system. Electrical systems also required large quantities of capital to build long distance transmission lines, transformer stations, and switching works. Then the highly ramified distribution networks in cities, towns, and countryside gobbled up even more. Poles had to be planted, trenches dug and filled, wires strung, transformers installed, and customer circuits wired. The process was continuous and never ending. Systems once built had to be extended, and then rebuilt to higher standards. Beyond financing these integral system expenditures of generation, transmission, and distribution, companies often had to finance consumption of their output, building equally capital-intensive power-consuming industries such as street railroads, pulp mills, mines, or smelters. To forge a secure monopoly in a competitive situation, utilities often had to absorb rivals at hefty premiums, and find the money for these mergers and acquisitions. As electrical utilities proliferated in the Americas at the turn of the twentieth century, promoters, executives, and engineers depended heavily upon capital markets to finance their system-building ambitions.

Wiring the world cost money. The financial system, which was itself in a process of evolution, had to adapt to accommodate this capital hungry new industry. Capital formation in home markets presented one set of problems. Raising capital for investment in companies in foreign markets presented even more formidable financial challenges. In this paper, I examine the ways in which the financial sector adapted to the needs and special challenges of financing foreign electric utilities in the first three decades of the twentieth century.

Electrification unfolded under different ownership and financial regimes in different parts of the Americas. Almost all U.S. electric utilities were owned and financed in the United States. In Central and South America, however, foreign owned and financed companies built the bulk of capacity, and certainly dominated the largest systems in the region. The Canadian situation was a hybrid. Domestic capital and entrepreneurship built about two-thirds of the electrical capacity. Foreign capital, British in the case of British Columbia, and United States in the case of Quebec, accounted for a significant minority of companies. To complicate matters further, Canadian entrepreneurship and capital played a major role in building the foreign owned companies in Latin America and Spain along with British, German, Spanish, and Belgian capital. During this period, Canada both received and exported capital for electrical utilities. The U.S.,

though active in Canada from the turn of the century, did not become a significant exporter of capital for global electrification until the 1920s.[2]

Electrification of the Americas involved the building of capital-intensive physical structures and organizations in geographically separate markets. The companies operated far removed from one another. On the other hand the financial system developed to finance government debt, railroads, financial intermediaries, and trade was already international and highly integrated. Entrepreneurs could move capital, technology, and information through these networks with great speed and relative ease at the end of the nineteenth century. Though the companies might stand alone in their respective markets, at this level isolated companies could be financed and loosely connected within the international financial network. It is important at the outset to acknowledge that global electrification depended upon a robust, pre-existing international financial system that had grown up to serve other purposes and was open to new possibilities. Most of the financial instruments (trust deeds, bonds, stocks, preferred shares and credit instruments) and institutions (merchant and investment banks, underwriters, brokers, stock exchanges, and financial intermediaries) were already in place. There were, however, subtly different institutional environments in the capital exporting countries that conditioned the process of foreign investment. Global electrification significantly expanded volumes and broadened markets.

Nevertheless, electrification in foreign countries required some adaptation on the part of metropolitan capital markets. At the outset the business was new and not fully understood. Secondly, operations in foreign markets entailed risks that could not be readily evaluated. How could capital be raised in quantities without being discouraged by high rates of interest, and how could risk taking be rewarded with appropriately higher returns without attracting hostility from customers? Thirdly, capital once advanced became sunk. The facilities built could not be moved and in one sense became captive. Immobility increased risk. Fourthly capital had to flow in two directions between several currencies, outward to the host country as investment, and back in the form of dividends, interest and redemptions. Convertibility had to be assured and exchange rates negotiated. Investments in pounds and dollars earned incomes in many currencies which in turn had to be remitted in pounds and dollars. While it lasted the gold standard solved many of these difficulties for those countries adhering to it, but not all did, and certainly not for the entire period. Foreign ownership in the form of the free

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[2] These matters are discussed in greater detail in C. Armstrong and H. V. Nelles, "Foreign Direct Investment and the Electrification of the Americas, 1892-1930," unpublished paper as part of the Global Electrification Project, 2002.

standing electrical utility did not represent the projection abroad of economic activity based upon mastery in a home market. These companies were for the most part organized solely to operate in foreign markets; few were built upon the foundation of domestic enterprises. Thus the track record of these companies could not be taken into account in assessing risk. In short some significant feats of financial engineering were required to overcome these obstacles for capital to flow readily towards the dams, power houses, transmission and distribution networks of overseas electrical utilities.

Differences in kind, to a certain extent geography, and time complicate the analysis of the financing of these companies. Earlier papers from this collaborative project have identified at least four different types of foreign owned electrical enterprises, namely, the industrial satellite, the enclave company, the free-standing operating company and the holding company.[3] The industrial satellite was a classic type of foreign investment, a projection from a mature market into a less developed one by an electrical equipment manufacturer with a view to establishing a new market for exports. The enclave company took the form of an isolated electricity using industry that broadened its activities into electrical supply and distribution. Operating companies were integrated electric utilities organized in one country to operate in another. They were freestanding multi-national enterprises. Finally, holding companies consisted of a portfolio of operating companies enjoying some common managerial, financial, and technical services. Over time the industrial satellite and enclave companies tended to morph into operating and holding companies. Each kind of firm involved a different relationship with the financial sector. Satellite companies drew capital through networks established by their parent firms. For enclave companies electric utility functions were secondary to the firms' primary manufacturing, mining, or smelting activities and were thus financed through them. Operating companies approached capital markets unmediated. Finance had to be designed uniquely for them. Holding companies were to some extent the reverse: they represented capital markets on the hunt for properties to bring into the portfolio as part of a much larger financial engineering project.

Geography too played a role Not only did the location of the host country for business activities have a bearing upon the finance of firms, but so too did the origin of the capital. Some economies were more closely integrated into the emerging world economy and their institutions functioned seamlessly with those in metropolitan countries. Canada might

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[3] Mira Wilkins, "Multinational Enterprise and International Finance," unpublished paper as part of the Global Electrification Project, 2002.

be an example of a country whose financial institutions, though different, were intimately connected to and functioned in harmony with those of Great Britain and the United States. In other cases the integration was less than complete and institutional barriers existed that had to be overcome – along with language and cultural differences. Argentina, Brazil, Chile, and Mexico lay somewhere along this dimension. British, German, Spanish, Italian, U.S. and Canadian capitalists approached foreign enterprises with slightly different institutional support structures and methods of operation.

Thirdly, time also matters. Not only do firms evolve, as has just been mentioned, the economic and political context within which firms must conduct their business changes, often dramatically. While this period covers one of the major period of global capitalist expansion in relatively stable political and economic circumstances, it also encompasses several recessions (1902, 1907, 1913, 1920), a World War, revolutions (Mexico and Brazil), nationalist and public ownership insurgencies (Ontario and Brazil), the postwar dispossession of German foreign investments, the eclipse of sterling by the dollar, monetary instability in metropolitan countries as the gold standard wobbled then collapsed, as well as some monetary unorthodoxy in some of the host countries (most notably in this region Brazil's attempt to valorize coffee). The capital structures unpinning these electrical enterprises had to be both initially responsive to the capital needs of the firms, and resilient to withstand the gales of political and economic uncertainty that periodically tore through the global financial system.

Having thus far stressed differences, the underlying similarities uniting these companies need to be noted. Over time strong central tendencies in organization and technology emerged. Secondly at a very basic level all companies, whatever their origins, state of evolution, or geographical location faced common challenges. Money had to be raised, transferred, and productively spent, plant built, wires strung and labor recruited and trained. Thereafter assets had to be managed; income had to be gathered and a return on investment transferred back through the external network to ensure a constant flow of new capital into the ventures. The remainder of this paper will attempt to isolate some of these financial institutional structures and practices by examining first the process of investment for first movers, then system builders, and then the return on investment.

Investment: First Movers to 1903

Electrical equipment manufacturers backed by merchant banks led the first wave of foreign capital into the electric utility markets of Latin America. Metropolitan financiers on the other hand dominated the push into Canada. Table 1 provides a partial list of some of the main first movers. The list is not comprehensive but it does offer a suggestive overview of developments up to about 1903. The genesis and operations of

many of these companies have been reported on elsewhere. Here the focus will be upon their finance. The information contained in the table reminds us that we should not be too literal minded in defining electrical utilities. Electricity found its way to market through various structures, often through pre-existing utility companies providing other services. Water, gas, tramway, and even telephone companies served as conduits for electrical service especially in South America.

In addition to these companies, many indigenous corporations also served customers in these markets. Mule and horse drawn tramways were the most numerous locally owned utilities operations. A substantial scaling up of the capital structure was required to electrify a tramline, but with a little help, it could be accomplished. Indeed, one of these locally-owned companies, the Jardim Botanico Company in Rio de Janeiro, introduced electric trams to the South American continent in 1892. An emissary from the Thomson-Houston Company in the United States seems to have been the moving spirit behind the technological transformation. It also appears to be the case that Thomson-Houston took back Jardim Botanico bonds in payment for its equipment and technical services. It also may have acquired a significant ownership interest in Jardim Botanico at the same time. The Jardim Botanico electrification represented a situation in which foreign capital entered in a subordinate way, facilitating and accommodating, without gaining total control.[4]

The Mexico Electric Works organized in the mid 1890s represented quite a different model. In this case Siemens & Halske, the German electrical equipment manufacturer, teamed up with a British merchant bank, Werhner Beit & Company, to create a wholly foreign owned and controlled electric utility in the Mexican capital. Siemens supplied the equipment and the expertise; Werhner Beit supplied the capital and management. At the turn of the century the Mexican Electric Works had established itself as the main street lighting and commercial electricity supplier in Mexico City.[5] A similar story was played out at about the same time in Rio de Janeiro and Buenos Aires. A German-owned telephone company became the vehicle through which German electrical equipment manufacturers and industrial banks built a small electric utility lighting central Rio. The Belgian-owned Societé Anonyme de Gaz de Rio de Janeiro also provided limited electric light service.[6] In Buenos Aires a

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[4] D. McDowall, *The Light: Brazilian Traction, Light and Power Company, 1899-1945* (Toronto, 1988), 131.

[5] C. Armstrong and H.V. Nelles, *Southern Exposure: Canadian Promoters in Latin America and the Caribbean, 1896-1930* (Toronto, 1988), 88-9.

[6] McDowall, *The Light*, 130-2; Armstrong and Nelles, *Southern Exposure,* 66-7.

TABLE 1 First Movers among Foreign-Owned Electric Companies

Company Name	Country of Origin	Place of Operation	Entered Service	Business Activities	Affiliation (if any)
Brazil					
Companhia Ferro-Carril do Jardim Botanico	Brazil USA	Brazil-Rio	1856, 1892	Trams, Electricity	Thomson-Houston, GE
Brazilianische Elecktricitats Gesellschaft	Germany	Brazil-Rio	1899	Tram, Telephone, Electric	
Rio Street Railway Company	USA	Brazil-Rio	1869	Mule tram	
Societe Anonyme de Gaz de Rio de Janeiro	Belgium	Brazil-Rio	1886, 1899	Gas, Electric	
San Paulo Gas Company	Britain Brazil	Brazil-Sao	1897	Gas, Electric	
Mexico					
Mexican Electric Works	Germany	Mexico City	1897	Electricity	Seimens & Halske, Dresdener
Mexican Gas and Electric	Britain Brazil	Mexico City		Gas and Electricity	Anthony Gibbs
La Compania Explotadora de las Fuerzas Hidro-Electricas de San Ildefonso	Swiss Mexico	Mexico City		Electricity	
Mexico Electric Tramways	Britain Brazil	Mexico City	1898	Trams, Electricity	Wernher Beit
Chile					
Chilean Electric Tramway and Light	Britain Brazil	Chile Santiago	1898	Trams, Electricity	Wernher Beit, AEG, Deutsche B
Elektrische Strassenbahn Valparaiso AG	Germany	Chile Valparaiso	1903	Trams, Electricity	Seimens, AEG
Central Mining and Investment Corporation	Britain	Chile Valparaiso		Mines, Electricity	

Company Name	Country of Origin	Place of Operation	Entered Service	Business Activities	Affiliation (if any)
Argentina					
Anglo-Argentine Tramways Company	Britain Germany	Argentina Buenos	1876	Trams, Electricity	Union Electricitas Gesselschaft
Compangnie Generale de Electricite de la Ville de Buenos Aires	France	Argentina Buenos	1899	Electricity	Union Electricitas Gesselschaft
Canada					
British Columbia Electric Railway	Britain	Canada Vancouver	1898	Trams, Electricity, Gas	
Canada Niagara Power	USA	Canada Niagara	1899	Electricity	Niagara Power
Ontario Power Company	USA	Canada Niagara	1900	Electricity	
Shawinigan Power	USA	Canada Quebec	1903	Electricity	Alcoa

former British tramway company, acquired by German interests, generated the first electricity in the Argentine capital.

German, rather than U.S. or British, capital appeared to be more nimble in capturing major Latin American markets in the first phase of electrification. This was in part because German electrical equipment manufacturers were the largest in the world.[7] There was another reason: German industrialists managed to link manufacturing and finance in such a way as to make new markets for electrical equipment. In this they were several steps ahead of their United States and British rivals. Two large German banks, the Deutsche Bank and the Dresdner Bank, were established as FDI in several Latin American countries (Argentina, Brazil, Chile and Mexico) financing German trade.[8] During the late 1890s the two major German electrical equipment manufacturers allied themselves with major banks to spread electricity throughout Europe.[9] The electric equipment manufactures would organize companies to purchase equipment; the associated banks would in effect underwrite the new company, usually through the purchase of bonds and/or stock on a discounted basis. As the enterprise became a going concern, the banks

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[7] Peter Hertner, "German Multi-National Enterprise before 1914: Some Case Studies," in *Multinationals: Theory and History,* ed. Peter Hertner and Geoffrey Jones (Aldershot, 1986), 125. Hertner estimates that Germany had about 35 percent of world electrical equipment production in 1913 as compared with 29 percent for the United States. Germany certainly dominated exports, with 46 percent of the total compared with 22 percent for the British and 16 percent for the United States.

[8] George F. Young, "German Banks and German Direct Investment in Latin America, 1880-1920: The Case of Electricity," in *Foreign Investment in Latin America: Impact on Economic Development,* vol. B10, ed. Carlos Marichal (Milan, 1994), 57-68. The extended version of this paper published in Carlos Marichal, coordinator, *Las inversions extranjeras en América Latina, 1850-1930* (Mexico, 1995), 96-124 lists in detail the banking participants in these companies.

[9] Peter Hertner, "German Multinationals," 128; Hertner, "Financial Strategies and adaptation to foreign markets: The German Electro-technical industry and its multi-national activities: 1890 to 1939," in *Multinational Enterprise in Historical Perspective,* ed. Alice Teichova, Maurice Lévy-Leboyer and Helga Nussbaum, (Cambridge, U.K., 1986), 145-59; and Hertner "Global Enterprise Before the Second World War: The Example of the German Electro-Technical Industry," in *Historia de Empressas E Desenvolvimento Economico*, ed. Tamas Szmrecsany and Ricardo Maranhao, (Sao Paulo, 1996), 115, and for the case of expansion into France see Hertner, "Technologie et capitaux allemands dans l'industrie électrotechnique francçaise avant la Première Guerre mondial: un premier bilan," in *Les Entreprises el leurs Réseaux*, ed. Michèle Merger and Dominique Barjot (Paris, 1998), 506-7.

would gradually sell their holdings to the general public as these securities rose in value. This way they turned their capital and realized a capital gain profit that exceeded ordinary loan rates.[10] German businesspersons employed the same collaborative strategy in extending their markets to major cities in Latin America using the already established German banks.

Some account must also be taken of the structural impediments to the flow of the technology into some Latin American countries. Terms of trade tended to favor overseas capital. Trade regimes dependent upon commodity exports and manufactured imports tended to lower the exchange value of local currencies, making it more difficult for local capitalists to raise money locally to invest in these relatively capital-intensive projects. Foreigners, whose currencies would buy more, held a significant monetary advantage. They could purchase equipment in their own currency, which would go further purchasing labor and materials abroad. The second factor to be noted is the absence of coal in Central and South America. Early electric works dependent upon coal-fired generating stations in this region had to import their coal, mainly from Great Britain (Wales). Electric utilities in the Southern Americas thus experienced higher operating costs and, therefore, higher output prices that tended to discourage consumption. Monetary influences thus privileged foreign capital; but they had higher operating costs because energy imports and consumption dampened by higher prices tended to reduce firms' profitability once established.

The Canadian case differed significantly. Financiers and industrialists rather than equipment suppliers drove the process. On the west coast, for example, R. M. Horne-Payne, a British financier familiar with Canada through railroad and land company investments, seized an opportunity to purchase some properties with good franchises, amalgamate, rebuild, refinance, and place these relatively secure investments with his growing stable of British clients. The British Columbia Electric Railway was an integrated utility, embracing electrical, tramway, and gas service.[11] In Ontario, on the other hand, the two Niagara

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[10] Luciano Segreto has also written extensively on this practice. See for example, "Financing the Electric Industry Worldwide: Strategy and Structure of the Swiss Electric Holding Companies, 1895-1945," *Business and Economic History*, 23 (1994): 162-75 and "Le Role du Capital Étranger dans l'Industrie Électrique," in *Histoire de l'Électricité en France*, vol. 2, ed. Maurice Lévy-Leboyer and Henri Morsel, (Paris, 1994), 982-87 for the period before World War I.

[11] C. Armstrong and H. V. Nelles, *Monopoly's Moment*, (Philadelphia, 1986), 96; Patricia Roy, "Direct Management from Abroad: The Formative Years of the

companies promoted in the 1890s but not built until the turn of the century, were essentially power exporting operations. Situated just on the other side of an international river, the power lines of these companies served mainly industrial users in Niagara and Buffalo. New York financiers developed the Canadian Niagara Power Company just across the river from their pioneering U.S. plant. Buffalo capital, coming mainly from industrialists, financed the Ontario Power Company to deliver cheap hydroelectric power to the Buffalo market.[12] In Quebec, the Shawinigan promotion of J. E. Aldred, a joint Boston-Montreal enterprise, supplied power to an adjacent aluminum and chemical smelting complex, and over a long-distance transmission line wholesale power to the locally-owned Montreal electrical utility.[13]

These British and U.S. flotations in Canada emerged from deep and well-established capital markets in London, New York, and Boston. Horne-Payne could organize and capitalize his Vancouver property as a Canadian railway and offer it to a knowledgeable and receptive market in London. J. P. Morgan, Francis Lynde Stetson, John Jacob Astor, and William K. Vanderbilt, among others, organized and financed the Niagara Power Company (the parent of the Canadian Niagara Power Company), in New York. These men, at the very heart of the New York capital market, had already floated many other ventures; in particular, they had financed both Edison and Westinghouse. This pre-existing U.S. domestic underwriting syndicate could readily accommodate the Canadian subsidiary. It was not only in a familiar cultural and economic jurisdiction, but also within sight of their Niagara Falls, New York plant.[14] The Ontario Power Company, initiated by Buffalo interests, and the Shawinigan operations, promoted jointly in Boston and Montreal, represented second tier capitalists following the metropolitan lead, exploiting opportunities slightly further a field.

The impulse behind the first mover foreign investors in the electrification of the Americas differed in the north from the south. Established financiers in metropolitan markets mobilized existing

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British Columbia Electric Railway," *Business History Review*, 47 (Summer 1973): 239-59.

[12] H. V. Nelles, *The Politics of Development* (Toronto, 1974), 227.

[13] Claude Bellevance, *Shawinigan Water and Power, 1898-1963, Formation et décline d'un groupe industriel au Québec* (Montréal, 1994) 223-33.

[14] For a brief recent account see William Irwin, *The New Niagara* (University Park, Penn., 1996), p97-152. The classic account is Edward Dean Adams, *Niagara Power: History of the Niagara Falls Power Company* (Niagara Falls, N.Y., 1926).

instruments and networks to extend an innovation into Canada either as a free standing or an enclave-export proposition. The pull towards Canada in most cases was the abundance of waterpower contiguous to the United States in the case of Niagara, or relatively close to urban centers in the case of Shawinigan and, later, Vancouver. In South America, European electrical equipment manufacturers seem to have inspired much of the early electrical companies as satellites to create markets for their products. These equipment companies drew upon their own resources, but in most cases they entered Latin American markets allied with merchant banks, Werhner Beit in the case of Mexico, and the Dresdner Bank in the case of Rio. The banks either refinanced existing companies, permitting them to electrify their operations, or organized companies to exploit newly granted urban franchises. The Canadian companies were mostly hydroelectric ventures, taking advantage of extraordinary water powers. The first foreign-owned Latin American electric companies built much smaller capacity thermal electric stations dependent upon imported coal. Canadian capitalists were simultaneously exploiting electric utility operations in most major cities and towns. The foreign ventures came in alongside, sometimes as exporters primarily, sometimes as wholesale power-suppliers to established distribution systems. In Latin America, the new electric companies were built in the place of domestic enterprise. Access to capital, technological knowledge, organizational know-how, and exchange rate biases favored external capital over local initiative. Working with one or several banks, the European equipment manufacturers built some of the first electric utilities in the major Latin American markets.

Investment: The System Builders, 1903-1929

By the time these pioneering ventures entered operation in Latin America the business model of the utility industry had begun to change in metropolitan markets. Typically a single regional monopoly superceded many small, competing companies in each business activity, electricity, transit, gas, and telephone. In many North American cities, competing street railway companies had been amalgamated into a single integrated system serving the entire metropolitan area. Frequently this process of amalgamation accompanied the technological transition from animal motive power to electrification. Electricity offered more rapid service, lower operating costs, but higher capital costs, thus creating a strong inclination to consolidate many separate operations to secure this investment against competition. Electricity generation and transmission became an integral part of street railway operations. Often the electric service blossomed into a full-scale operating entity. In some cases electric companies in search of large power-using customers consolidated street railways to provide a base load for their power operation. In a few cases gas franchises were rolled into the operation. Integrated utilities systems evolved in most major North American cities in the 1890s and early

twentieth century. Based upon the natural monopoly characteristics of electrical and gas distribution, as well as street railway operations, these integrated utilities also captured economies of scale, particularly in the production and distribution of electricity, and to a certain extent in management and finance. Thus after the first movers who established the numerous small, competing pioneer enterprises, a second generation of system builders appeared to consolidate many small companies into integrated regional monopolies.[15]

In all U.S. cities the second generation system builders were domestic capitalists. The best known, of course was Samuel Insull who, it could be said, first realized and acted upon the economies of scale associated with electrical generation. In Canada too, with one exception, the second-generation networks were spun by domestic capitalists, most notably William Mackenzie in Toronto and Herbert Holt in Montreal. Foreign capital in the electrical sector, mainly U.S. capital, was concentrated in enclave activities associated with pulp and paper, aluminum smelting, power wholesaling, or exporting. The exception to domestic control of regional electric utility monopoly creation in Canada was the British Columbia Electric Railway (BCER). Directed by R. M. Horne-Payne from London England and managed adroitly by Johannes Buntzen on the ground in Vancouver, the BCER forged an integrated hydroelectric-based regional monopoly comprising street railway, inter-urban, electric, and gas utilities. Canadian and U.S. capitalists were thus by the end of the 1890s familiar with the model of a regional electric monopoly based upon a large-scale generating system either thermal or hydroelectric. Canadian entrepreneurs transferred this model to Latin American markets in a second wave of foreign investment in the electric utilities industry after 1899.

The foreign capitalists who were the main system-builders in Latin America came from three different directions backed by three quite different forms of financial organization. German-based companies advanced with the assistance of industrial banks. Canadian capital was mobilized in loosely organized financial syndicates. Somewhat later, U.S. capital moved into Latin America consolidating local operations into systems in the form of the utilities holding company. The German industrial bank, the Canadian syndicate, and the U.S. holding company

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[15] For the United States see Hughes, *Networks of Power*; William Hausman, "The Historical Antecedents of Restructuring: Mergers and Concentration in the U.S. Electric Utility Industry, 1879-1935," American Public Power Association, 1997. For Canada see Armstrong and Nelles, *Monopoly's Moment*.

represented three different ways of meeting the financial challenges presented by utilities system-building in the Latin American market.

Before World War I, system-building using the German industrial bank model dominated in Argentina and Chile. By contrast, Brazil, Mexico, and later Spain were the main theatres for Canadian syndicate activities, though Canadian syndicates were also active in Puerto Rico, Jamaica, Bermuda, Cuba, and British Guiana. U.S. holding companies, mainly United States and Foreign Power Corporation, reorganized electric utilities in the 1920s in Peru, Chile, and parts of Brazil.

In a series of articles Peter Hertner and Luciano Segreto have documented the way in which the two largest elements of the German electrical equipment manufacturing industry AEG and Siemens, allied themselves with investment banks to create markets for electrical equipment first in Europe and then around the world.[16] Well-established investment banks served German industrialists, great and small. The electric equipment manufacturers and bankers went one step further, creating specialized subsidiary banks to finance electric utilities. As a matter of convenience these German interests organized these financial vehicles in Switzerland and Belgium; the Siemens-affiliated bank controlled by the Dresdner Bank went by the acronym Indelec, and the AEG affiliate supported by the Deutsche Bank was best known as Elektrobank. A third company based in Belgium and associated with AEG, SOFINA (Société Financière de Transports et d'Entreprises Industrielles), gradually emerged from a group of bond houses. These specially organized banking subsidiaries acted as classic merchant or investment bankers. They underwrote new firms or took new issues of established firms. They held these securities as investments, but they also turned their capital and realized capital gains by selling minority holdings to the investment community. Working alongside these specially-created finance companies were a host of well established German merchant banks or investment banks. Together this consortium of investment banks supported German electrical entrepreneurship abroad.

The Compania Alemana Transatlantica de Electricidad (CATE), organized by the Deutsch-Ueberseische-Electrizitäts-Gessellschaft (an AEG subsidiary) to exploit electricity concessions in Buenos Aires, provides a classic example of this industrial bank-based investment. In 1907, CATE consolidated the many tramways in the city, electrified them, and created an integrated electricity-transit utility financed by a consortium of great banks, investment banks, and specialized electric

[16] See notes 9 and 10.

utilities finance companies.[17] By 1914, CATE had established an effective monopoly in the city and constituted the largest German investment in Argentina. It extended its reach into Argentina's secondary urban markets organizing companies in Rosario and Mendoza. These same German interests extended their reach to Chile in 1905 taking over a British owned electric tramway and light company in Santiago and a small German company in Valparaiso.[18] CATE also consolidated utilities properties in Montevideo, Uruguay about the same time.

The Latin American market was significant, but by no means the most important from the point of view of the German industrial bankers financing electrification. Segreto notes that in 1914 only 3.4 percent of Electrobank's assets were located in South America, compared with 53 percent in Germany, 18 percent in Italy, 8 percent in Switzerland, 5 percent in Spain and Portugal with 10 percent distributed in other parts of the world, mainly Asia.[19] By 1914, CATE was one of the three largest German overseas investments in the world. Its activities in South America grew based upon aggressive export-oriented manufacturers, technological mastery, close ties between manufactures and bankers, and a sophisticated capital market structured to absorb the large quantities of bonds required.

Simultaneous with the advance of German capital from Argentina into Uruguay and Chile, Canadian capital descended on South America from the north. The Canadians came from a quite different economic and institutional situation. No powerful technologically-advanced electric equipment manufacturing industry pushed Canadian enterprise beyond its borders. Canada did not possess industrial banks or merchant banks. Nevertheless, Canada was a rich country endowed with a highly articulated retail and commercial branch-banking system, and a highly-developed insurance sector that concentrated the country's savings in the hands of a few metropolitan financiers. On the supply side, there was capital waiting if the proper vehicles could be established. On the demand side,

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[17] The original ownership group consisted of Deutsche Bank (16%), AEG (16%), Berliner Handelsgesellschaft (13%), Delbruck Leo & Co. (11%), Nationalbank fur Deutschland (8%), Jacob Landau (8%), Gedruber Sulzbach (8%), Schweizerische Keditanstalt (7%), Elektrobank (3%) and Werner Beit (10%). Amalgamations and new issues brought additional partners into the group; see George F. Young, "German Banks," 63. The effects of tramway electrification can be studied in James R. Scobie, *Buenos Aires: Plaza to Suburb* (New York, 1974), 173-8 and tables 269-71.

[18] World Power Conference, Chile article

[19] Segreto, "Le financement externe," 204. Indelec had no holdings in South America; its assets were similarly concentrated in Italy, Germany, and Russia.

entrepreneurs had honed their skills organizing and managing utility enterprises in the major Canadian cities. They knew the properties of these enterprises and their potential profitability. In particular, they understood the financial possibilities of the new hydroelectric technology that, at scale, dramatically lowered the cost of electricity and raised profits on smaller margins on expanded output. Canada lacked additional urban sites to apply this knowledge, and aggressively exploited domestic capital in the nearest market, the United States. Thus, when opportunities presented themselves in unfamiliar locations, Canadian capitalists were prepared and financially capable of taking the risks. They adapted a technique developed in the Canadian context to finance Canadian utilities to underwrite their international operations. Their essential innovation was to organize and manage the capital of the firms in such a way as to reward risk-taking with higher returns without exciting envy.

Canadian capitalists built systems first in Sao Paulo, then Rio de Janeiro, and Mexico City. They did so by taking over a new concession from a local speculator, the Gaulco concession in the case of Sao Paulo, Reid in the case of Rio, and Vacquie in Mexico City. Thus, the Canadian companies entered each city as competitors in a setting already occupied by first movers. Using hydroelectric technology as their competitive advantage, they established their own low-cost system and by stages absorbed the local competition. Led by a mercurial engineering genius, F. S. Pearson, these companies built profitable monopolies by deploying state-of-the-art hydroelectric projects on the margins of these large urban centers and long-distance transmission lines to distribution networks. Integrated or associated street railways provided the base load that in turn lowered the cost of domestic and commercial lighting. In time, industrial power for mills and factories hastened the industrialization of these markets.[20] By 1913, these three systems, organized by Canadians with head offices in Canada, were the largest in Latin America. They were financed, however, quite differently than the German enterprises in the region.

Canadian syndicate style, forged after the first successes in Sao Paulo at the turn of the century, established the pattern for subsequent promotions. The financial group who in effect underwrote the company consisted of a group of individuals rather than a group of institutions.[21] The lead capitalist organized a group of colleagues who each agreed to take a proportion of the first issue of bonds at a discount, paying for them in

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[20] Warren Dean, *The Industrialization of Sao Paulo* (Austin, Texas, 1969).

[21] Armstrong and Nelles, *Southern Exposure,* 301-2, list the members of the first Sao Paulo syndicate.

installments. The strength of the returns from the bond issue was used to build the enterprise and put it into operation. The common stock of the company was used to acquire the initial concessions, pay the promoters, establish control of the company, and was distributed as a bonus pro rata to the bondholders. The success and future growth of the enterprise was thus primarily concentrated in the common stock that, in the initial promotion, was distributed to insiders at no cost. Investors were attracted both by the yield on the bonds, and the likelihood of substantial capital gain from the stock. In one sense, the key to a promotion was the willingness of the heads of the major banks to lend money to finance all or part of the bond purchases on a personal basis to the individuals in the syndicate. Nothing worked without the blessing of either E. S. Clouston, head of the Bank of Montreal or B. E. Walker, his counterpart in Toronto at the Bank of Commerce. For example, the Rio de Janeiro promotion took longer than expected to organize because E. S. Clouston was initially skeptical.[22]

The underwriting group or financial syndicate agreed to pool their bonds and often the stock that would be handled for a specified period by a syndicate manager.[23] Sales to second and third tier participants were taken from these pooled holdings pro rata. A promotion thus consisted of concentric rings of capitalists holding bonds, each with diminishing proportions of common stock as a bonus the further they were from the epicenter of the promotion. The syndicate manager sold into the open market, and bought if necessary to maintain prices. Participants were not free to buy and sell; the syndicate manager made the market. In an unregulated capital market, with rather thin public participation, market manipulation of this kind was effective as a means of attracting new outside investors. Gradually the bonds and stock of the company obtained wider distribution during the course of which the insiders realized their gains. The financial syndicate style of promotion was ideally suited to a small, highly-concentrated, emerging capital market where everyone knew everyone else and social bonds kept other self-seeking instincts in check during the financing. The appreciation of the bonus stock as the company became a going concern and the stock attracted a following both rewarded risk-taking and disguised the extent of the risk premium.

Each new offering of bonds revived the syndicate, frequently adding new participants. Sometimes some members dropped out. The syndicate form could span the Atlantic as Canadian financiers in London or London

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[22] Armstrong and Nelles, *Southern Exposure,* 65

[23] It was necessary to pool all of the bonds. In the Sao Paulo case, for example, 2/3rds of the bonds were pooled, 1/3 not.

financial houses with business in Canada bought into positions, especially after the financial crisis of 1907. It could also include financial institutions such as trust companies, bond houses, and merchant banks as well as individuals. Eventually this syndicate style linked European, British, and Canadian financiers and financial institutions as the capital requirements of these Latin American firms grew to exceed Canadian capability and the securities found a ready market in Europe. In due course, after many iterations and a gradual shift from Canada to European markets, the Canadian syndicate form established an alliance with the European industrial bank style.

This pattern actually emerged early in the process. As system-building advanced in all markets, German bankers had to decide in which cases they preferred to take the lead and which they preferred to sell out to take minority positions in other system-builders' projects. In Argentina, Chile, and Uruguay, Germans and German-owned companies led. In Brazil and Mexico, on the other hand, Canadian interests built the systems, absorbing earlier German-owned first movers. The international financial nature of the electric business assisted in this process of consolidation. When Canadian capitalists wanted to swallow up rivals in Rio de Janeiro, some of the local companies proved particularly obdurate. The Belgian-owned electric firm, on the other hand, seemed quite amendable to trading its insecure securities for much more promising bonds in the ascendant Canadian enterprise. Similarly, in Mexico City, the German-owned Mexican Electric Works responded enthusiastically to the Mexican Light and Power take-over bid in 1905. The company received $900,000 in cash, $1,000,000 in bonds; its principals Siemens and Dresdner also received two seats on the board. Financiers made deals rather than fight to the last ditch. Canadian promoters dealt with Belgian, British, and German bankers in making some of their key acquisitions. Some of the key negotiations and decisions pertaining to the Rio and Mexican utilities markets, for example, occurred in London and Brussels. Thus, early-on European first-mover investors became attached in an integral way to these Canadian utilities and became part of subsequent financing syndicates. The take-over process brought these Canadian securities onto the European market where their relative success created an appetite for more. Thus in Belgium the bond house of Stallaerts and Loewenstein (one of the forerunners of SOFINA) became the center for subsequent Canadian offerings and in Germany the Dresdner and later the Deutsche banks acquired ongoing participation. By 1913, Canadian overseas utilities syndicate offerings were roughly divided among Canadian, British, and European investors. In this way, companies with a

book value in 1913 of $216 million dollars were constructed in the major urban markets of Latin America.[24] There is no way of telling precisely, but this probably represented an actual investment of somewhere between 50 and 75 percent of that total—a not inconsiderable sum.

Thus, a fluid and international style of capital mobilization developed around the "Canadian" utilities companies in Latin America. These were well-managed, technologically-sophisticated companies situated in rapidly-growing urban and industrial markets. Their profitability valorized their common stock agreeably and their continuing need for additional capital created lucrative opportunities for new issues of securities. Given the success of these companies, a search for comparable opportunities brought the Canadian syndicate style of promotion to Barcelona. There the promoters encountered a familiar situation: a crowded local transit and electric market in a booming city waiting to be amalgamated, a nearby technologically demanding waterpower site to exploit, and the possibility of energizing the consolidated urban utilities with cheaper hydroelectricity. The Barcelona syndicate, drawing upon Canadian personnel and experience, but financed mainly in London, Brussels, and Paris in British pounds sterling, represented the last stage of the Canadian syndicate style of promotion before World War I. The syndicate for the Barcelona Traction, Light and Power Company in 1912 consisted of Arnold Spitzer in Paris and Alfred Loewenstein of Brussels who divided £1.5 million of bonds with a 50 percent stock bonus, Robert Fleming & Company in London who took the lead in the £1.3 million offering in Britain, and E. R. Wood in Toronto who managed the Canadian portion of £1.3 million.[25]

War and Revolution changed the nature of the game. The halcyon days of the pre-war era did not return. After World War I, more exigent and local authorities, envious local businesspersons, militant trade unions, and devaluation of currencies tightened the screws on all foreign utility companies in Latin America. It became more difficult to raise capital the old-fashioned way as investors were reluctant to risk new capital in the face of diminishing returns. Under these circumstances, a new form of financial institution appeared to finance the acquisition, amalgamation, and expansion of the existing systems: the utilities holding company.

It is difficult to know if the holding company form emerged primarily from the U.S. business environment of the 1920s, or evolved

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[24] Armstrong and Nelles, *Southern Exposure,* 355-9. Brazilian Traction amounted to $118 million in 1913; the two Mexico City companies combined totaled $98 million.

[25] For details and sources, see *Southern Exposure,* 164.

separately in Europe as a lineal descendent of the pre-war industrial banks. Both can be true. During the 1920s holding companies such as SOFINA and SIDRO based in Belgium and The Electric Bond and Share Company and American and Foreign Power based in the United States became the most dynamic forces in the finance and organization of foreign utilities. The principals in these holding companies knew each other, followed each other's activities closely, and built upon each other's successes.

The story of the holding company episode of irrational exuberance has been told many times: most rambunctiously and memorably by J. K. Galbraith in *The Great Crash*, somewhat defensively by Sidney Mitchell, the son of one of the chief practitioners of the art, and by Forest McDonald as an example of American technological and financial hubris. [26] William Hausman's monograph on the electric power industry contains an extensive and revealing section on the holding-company story based upon Senate hearings. Hausman explains the benefits and abuses of the holding-company structure, presents the quantitative evidence, assesses the extent of their control, and provides a lucid explanation of the financial leverage entailed by the pyramid structure. The holding company brought efficiencies to the sector through centralized managerial, engineering, consulting, and financial services, but what made the form tremendously attractive was its Croesus-like ability to produce wonderful capital gains for investors and large fees for large public offerings for the financial sector.[27]

Holding companies existed before World War I to assist in the financing of local U.S. utilities. They came into their own as vehicles through which regional utilities were brought into being through mergers. During the 1920s, the holding company became transformed into an essentially financial vehicle that magnified small returns from a host of underlying properties into vast control and phenomenal rates of return for the core group of shareholders at the pinnacle of the pyramid. From the mid-1920s on investors poured their savings into these holding company securities and those of other investment trusts. In this way, the U.S. electric industry in the 1920s was refinanced, its capacity greatly expanded, and its corporate structure realigned into a half-dozen or more varying sized pyramids. Capital mobilized by holding companies in

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[26] Sidney A. Mitchell, *S. Z. Mitchell and the Electric Industry* (New York, 1960); McDonald, *Insull*.

[27] Hausman, "Historical Antecedents," 31-45 for the period up to the end of World War I, 46-105 for the 1920s.

Europe and North America vastly expanded electrical production in the 1920s, pushing electricity into mass markets all over the world.

To work effectively, the holding company required numerous producing properties at various levels of the pyramid. Thus in the 1920s the holding company phenomenon created something of a capital or investment supply-push to buy or create local utilities. As the home market was rapidly being restructured, U.S. attention made its first major shift to foreign companies. The primary, though not exclusive vehicle for this overseas expansion was the American and Foreign Power Company which in kinship could be loosely thought of as the foreign arm of the Electric Bond and Share Company. Hausman and Neufeld document the significant rise of U.S. foreign direct investment abroad during the 1920s, the rapidly-growing proportion of that investment represented by public utilities investments, and the scope of holding-company activity within that sector. During the early 1920s, the Electric Bond and Share Company directly acquired properties in Guatemala and Brazil. American and Foreign Power Company, when it was organized shortly afterwards, acquired properties in Argentina, Brazil, Chile, China, Costa Rica, Cuba, Ecuador, India, Mexico, Panama, and Venezuela. In many cases American and Foreign Power took over properties previously owned by other foreign interests, Lord Cowdray's Whitehall Group in the case of Chile (which had taken over from displaced German capital represented by CATE). In Brazil, American and Foreign Power re-organized the regional utilities beyond the territories occupied by Brazilian Traction.

The holding company phenomenon also had an impact on Canada, as both a receiver and a projector. Several smaller U.S. holding companies, in their search for acquisitions, were led across the border into Canada to acquire properties. Thus in 1930 a small group of Canadian electric, gas, and traction utilities, mainly in border regions, fell under the control of U.S. utilities holding companies.[28] At the same time in Canada capitalists attempted to emulate the notable success of their U.S. counterparts. Holding companies were established to buy up domestic Canadian companies. In addition, one company, the International Power Securities Corporation, in a small way attempted to follow the lead of the American and Foreign Power Company by acquiring properties in Mexico, Peru, and Chile.

In Europe, an American, Dannie Heineman, head of SOFINA, and the now "Captain" Alfred Loewenstein, who organized his own Belgian

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[28] Hausman and Neufeld, "US Foreign Direct Investment in Electric Utilities in the 1920s," in *The Free-Standing Company in the World Economy, 1830-1996,* ed. Mira Wilkins and Harm Schroter (New York, 1998), 361-90.

investment trust, SIDRO, were the two most active generals in the deployment of the holding company or investment trust. Heineman, operating from both Brussels and Madrid, organized la Compania Hispano-Americana de Electricidad (CHADE) under the SOFINA umbrella to take over former German properties in Argentina and Chile.[29] Heineman also incorporated a SOFINA subsidiary in Canada, the International Light and Power Investment Company, to acquire Canadian properties abroad and attract Canadian investors to his operations.[30] Alfred Lowenstein had been involved for a long time in the "Pearson group" of companies. His bond house in Brussels was a major participant in the Canadian company syndicates since it had arranged the Rio company takeover of a Belgian competitor in 1905. After the war, Loewenstein managed to obtain a controlling interest in the two Canadian companies as they came out of receivership following the Mexican Revolution. He also acquired control of the floundering Barcelona promotion. In the late 1920s, Loewenstein led a theatrical and quixotic hostile takeover from within of Brazilian Traction. When it failed, he fell from grace and, more seriously, he plunged from his airplane over the English Channel.[31] Belgium with its lax securities laws, established banks and location beyond the reach of local tax authorities, became the neutral ground on which European capital (primarily German and to some extent French) participated in the finance of global electrical utilities via the holding company.

Through the 1920s, many of the electrical systems in the Americas were gathered up into Belgian, United States, and, to a lesser extent, Canadian holding-company portfolios. Brazilian Traction, for its part, remained notably independent, though it was briefly under assault from SIDRO. The holding company solved one of the problems of the established electric utility; it made it much easier to raise capital for capacity growth and expansion. Savings were pouring into these investment vehicles not because of the rate of return on individual properties, but rather upon the promise of elevated returns on senior level

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[29] Segreto, "Le Role du Capital," 1007; see also Raúl García-Heras, "The Anglo Argentine Tramways Co. Ltd and its Impact in the Urban Economy of Buenos Aires, 1876-1930," in *Foreign Investment in Latin America*, ed. Carlos Marichal (Milan, 1994), 83-92.

[30] Segreto, "Le Role du Capital," 1009-10. For a contemporary account see *Combines and Trusts in the Electrical Industry, The Position of Europe in 1927* (London, 1927).

[31] On the Loewenstein story see McDowall, *The Light*, 283 ff and Armstrong and Nelles, *Southern Exposure,* 256 ff.

securities. At the same time officers in these companies were not as deeply troubled by historically lower rates of return on operating companies as a result of rising costs, tighter regulation, or trade union militancy because these returns would be magically multiplied higher up the corporate pyramid. It was more important to have some rate of return to multiply, and properties upon which to pile ever-larger mounds of securities.

The holding company phase of electric development ended abruptly at the end of the 1920s. The difficulty with the pyramid structure was that it not only magnified small returns, but also it similarly exaggerated losses. As new properties could not be as readily obtained, and the return on investment began to drift downward, the whole house of corporations piled upon corporations came crashing down. A few de-layered and stripped down holding companies survived by focusing upon centralized services rather than financial leverage.

Return on Investment

The story of foreign investment obviously does not end with construction, operations, and control. One must achieve a return on investment to continue raising capital for expansion, renewal, and acquisitions. I conclude with a brief discussion of the Canadian cases, for which we have ample documentation of some of the institutional and managerial techniques of foreign utility operation: in particular, the close attention to the operating ratio, the two interconnected cycles of cash flow at home and abroad, the parallel structure of banking that moved money, and the importance of managing the stock to place it permanently where it was not likely to come back to the market.[32]

A significant portion of the correspondence between financiers abroad and managers on the ground borders on an obsession with what was termed the operating ratio. Metropolitan financiers sought to make this number, essentially the proportion of company revenue required to meet ordinary operating expenses, as small as possible. For their part, local managers were always under pressure to improve service to satisfy demand, thereby increasing the ratio. In a well-managed operation, financiers expected this ratio to fall much below 50 percent. By reducing expenses to a minimum, that left larger sums to be devoted to debt service, dividends, depreciation, and investment from retained earnings, all of which had a marvelously buoyant effect upon the price of the common

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[32] Most of what follows draws upon Armstrong and Nelles, *Southern Exposure,* and "Corporate Enterprise in the Public Service Sector," in *Foreign Investment in Latin America*, ed. Carlos Marichal (Milan, 1994), 68-82.

stock. For most of the first decade of the twentieth century, the Brazilian companies showed operating ratios of less than 40 percent. This number rose into the mid- 40s during World War I and then fell back to around 40 percent during the 1920s.

In a comparative corporate perspective, Brazil was a great and profitable success. Few companies could match this kind of performance. The Mexican properties showed comparable promise before the Revolution, but in the 1920s operating ratios were almost double the levels in Brazil, reflecting the much higher costs of doing business in post-revolutionary Mexico.

This very simple management tool was the primary means by which foreign owners tried to maintain a check on local managers. The operating ratio was the battleground between the competitive returns to capital and returns to labor and other factors of production. It was also the flashpoint between satisfying marginal demand promptly and deferring service improvements until large additional capital investments could be arranged. For their part, local managers deplored the publication of profit figures by metropolitan financiers eager to cultivate new investors. Information might be essential to raising new capital, but it certainly made operating in the local environment more difficult when customers and authorities knew how much money foreign investors were making.

The relatively low operating ratio associated with electric utilities (and to a lesser extent their associated tramways operations) draws attention to the fact that other costs were significantly greater than operating costs. This in turn leads to the observation that we should think of foreign investments of this sort as two separate but connected cycles of cash flow, one at home in the capital producing country and one abroad at the site of operations. In the home country capital had to be raised, interest and dividends paid, and additional capital raised to expand operations and so on indefinitely as the business grew. In addition, the huge fees paid to financiers themselves need to be taken into account. For example, the £4 million flotation of first mortgage bonds for the Barcelona Traction, Light, and Power Company in January, 1913, netted £3,238,300 after the discount and after the bankers commission of £620,000 only £2,618,300 or 65 percent remained to purchase existing companies and build the new hydroelectric facilities.[33]

Abroad, a minority proportion of revenues went to providing service; the majority was retained for reinvestment in renewals and expansion, and the service of capital. These two cycles were connected

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[33] National Archives of Canada, James Dunn Papers, vol. 42, F.S. Pearson to James Dunn, 14 Feb. 1913.

across the ocean by a flow of capital outward to finance expansion, and a backward flow of a return on that capital. But only the net rather than the totals had to move. A good portion of the capital invested in equipment and engineering services, for example, remained in the home countries. Similarly, interest and dividends could be paid from capital. At the operating site, retained earnings could provide large portions of investment in new facilities. To a yet undetermined extent, this replaced capital inflows. Nor did all interest and dividend payments have to cross oceans and currencies. The actual flows of capital one way and returns the other likely did not add up to the total, but rather some net amounts after deducting equipment purchases and capital service on one side and retained earnings substituting for foreign capital on the other. The net flows may have been much smaller than the book values.

Foreign utility companies did not exist in a business vacuum. They relied upon other services, most obviously engineering.[34] Less visible are the commercial and retail banks that provided essential services in parallel to the utilities companies. To work effectively the banks, too, had to be multi-national organizations. German and British businesspersons in South America had at their disposal a pre-existing banking system to provide accommodation and other services. Branches of British and German banks had been established in these markets to service trade. These foreign-owned banks became essential external parallel elements of the utilities business system. Utilities entrepreneurs could move money across international boundaries using the financial networks these organizations provided, such as essential transfer and exchange facilities both for incoming and outgoing remittances. Similarly, they provided businesses with local short-term commercial loans.

The banks in turn received the utilities companies' deposits. Each company in the Latin American market seemed to have its own bank or small group of banks associated with it. Argentina and Brazil already had a cluster of well-established British and German mercantile banks on the ground. In Mexico, by contrast, the Canadian companies brought their affiliated banking services with them from Canada. The Bank of Montreal established a branch in Mexico to handle Mexican Light and Power business; the Bank of Commerce followed to work with the Mexican Tramways Company, which in due course took over the electric utility. What is important to note about the banking services provided by these

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[34] See for example Greg Marchildon, "The Montreal Engineering Company and International Power: Overcoming the Limitations of the Free-Standing Company," in *The Free-Standing Company in the World Economy, 1830-1996*, ed. Mira Wilkins and Harm Schroter (New York, 1998), 391-420.

external organizations is the degree of protection that came with them, both fiduciary and extraterritoriality. Banks protected large sums in the most obvious way, with vaults and masonry, but also through well-established rules and codes of conduct. Regulators confronting a bank, bristling with international protections, faced a more formidable obstacle than that presented by an ordinary business.

What is particularly important in high-risk transnational investment cases (as were most Latin American cases at one time or another) is that deposits in a foreign bank become de facto "offshore" and to that extent beyond the reach (or even scrutiny) of local regulatory authorities. Funds could be whisked away in hours to safe havens abroad. During the Mexican Revolution, for example, people patronized the streetcars and paid their electricity bills even though the company was in receivership. These funds were transferred instantly through the offices of the Bank of Commerce to Canada where they were invested in Victory Bonds. These accumulated assets, $8,300,600 in total, far from the hands of Mexican officials, became spoils well worth fighting over as the company underwent reorganization after the Revolution.[35] During World War I and after, with erratic inflation of local currencies (compare Brazil) the management of foreign exchange becomes a much more important issue. Usually the franchises and trust deeds required principal and interest be paid in gold. In inflationary situations this could either squeeze the company's profits or the customers depending upon the terms of the franchise and the regulatory regime, usually both.

The international banking system, operating independently alongside the multi-national electric enterprises, provided essential services upon which the process of foreign investment heavily depended. A web of financial institutions (investment bankers, brokers, trust companies, insurance companies, and investment trusts) connected these foreign banks in their home markets in such a way that the process of investment was perfectly circular. Money sent out eventually came back, with interest and more.

It should be reiterated that the usual North American policy was to finance initial construction and operation entirely through the bond issue. The shares (of either nominal value or no par value) represented good will and control and were distributed to purchasers of bonds at a discount depending upon proximity to the ground floor of the syndicate. If the investment succeeded and the business was managed properly, expectations of growth based upon performance, adequate provisions for

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[35] House of Lords Record Office, Lord Beaverbrook Papers, Series H, vol. 75, F. J. Cockburn, Bank of Montreal, to Lord Beaverbrook, 17 Dec. 1919.

depreciation, and the continuous investment of retained earnings would valorize the common stock. Here was where the real money was to be made. Once in operation, shares could appreciate rapidly in value as the syndicate managed the narrow markets and as income from these natural monopolies was usually quite robust. The main advantage to investors was not only the yield on the bonds, and even less the dividends on the common shares, but rather the prospect of rapid capital gain on common stock acquired at a deep discount. Whether you held 100 percent or 10 percent of bonus stock with your bonds determined your personal rate of return combining interest, dividends, and capital gains. The stock's capital gain was the most interesting number. For this gain to be realized the stock would either have to be sold or, more likely, borrowed against, as banks would accept it as collateral once it had been valorized in the market.

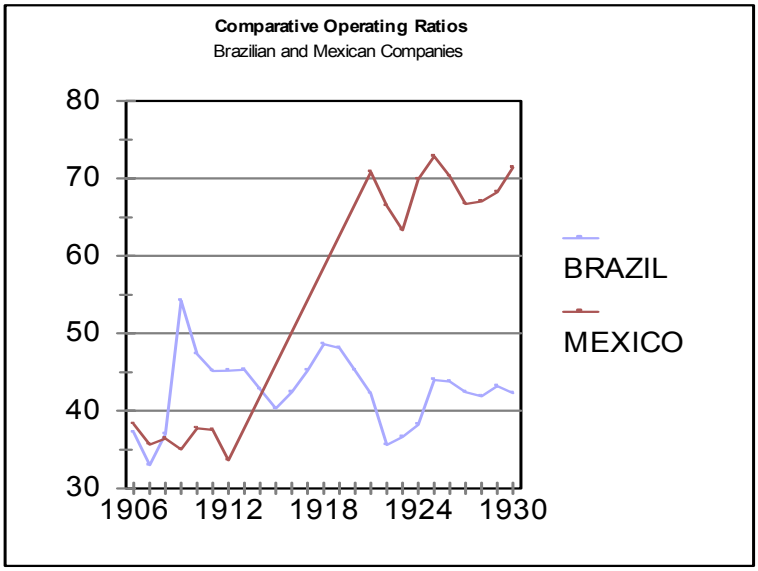
Insiders need not sell their stock to realize their gain; they could pledge it as collateral for loans, for example, once there was a market for it. Nor was the stock price left to the market to decide. A large portion of metropolitan financiers' correspondence involved elaborate schemes of market manipulation (now illegal) deployed to manage prices. Syndicate managers were not only making a market in the standard sense; they were also broadening and deepening the market for this new kind of issue, making the capital market bigger. The object was not just to get the price up as high as possible, which would only encourage profit taking amongst insiders, but to manage steady appreciation to attract investors who would hold the stock. This freed-up financiers' capital for new promotions. As the redoubtable F. S. Pearson reported to his London colleague James Dunn in 1909 as he completed construction in Mexico, the hard part was now over. The time had come to plant some articles in the financial press and begin the work of placing this stock "as a permanent investment" among stockholders who "won't sell when the prices rise."[36]

Figure 1 shows the nominal rate of return on the bonds and stock of the Brazilian and Mexican companies from 1906 to 1930. The data tell two contrasting stories, one of slowly declining but respectable profitability, the other of disastrous failure. That is not the point. The nominal statistics do not tell the whole story, and indeed the moral of the story depends in large part upon where the tellers stood with respect to the initial flotation and at what point they chose to realize their gains. Figure 2 shows the stock prices of these two clusters of companies over the same period. These figures remind us that there are several kinds of investors

[36] Quoted in Armstrong and Nelles, *Southern Exposure,* 104.

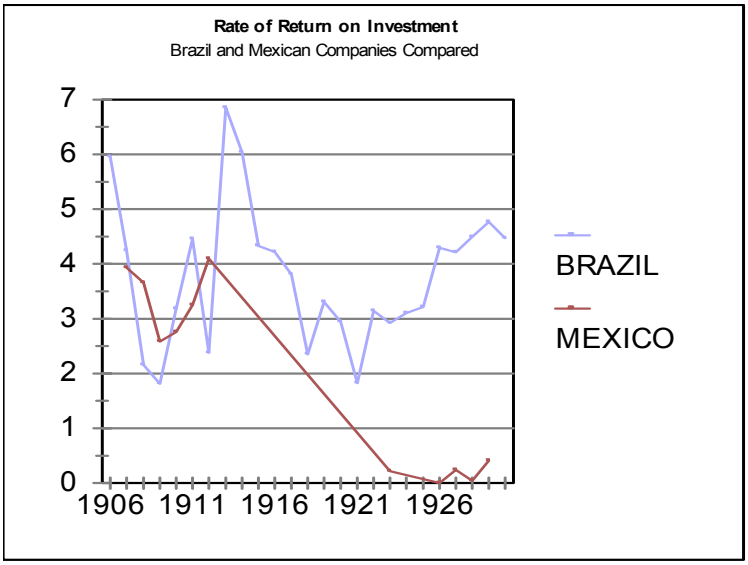
caught up in these enterprises. There were the promoters and underwriters who expected elevated returns for the risks taken; investors attracted after the fact by the performance and possibilities of continuing profitability, and of course those investors interested in slightly higher interest and dividends returns over the long haul. Each realized a different rate of return.

FIGURE 1



Source: Armstrong and Nelles, *Southern Exposure*, 351-59.

FIGURE 2



Source: Annual Reports, *Houstan's Annual Financial Review*.

Animal spirits drove these foreign investments whether through the German investment bank formulation, most obviously in the Canadian syndicate style, and through the financial legerdemain of the U.S. and Belgian holding-company operators. Capital was risked for different reasons. It came in different institutional packages and took different corporate forms. Investment was not a one-off proposition, but rather a continuous cycle of capital formation through investment and retained earnings. Foreign electric utilities, whether freestanding or projections abroad of companies in mature markets, leaned against a parallel structure of financial institutions that managed and secured cash flows. I have taken a first step towards comparing European and North American approaches to the financing of global electrification. My focus has been upon the Latin American region where several systems of finance and entrepreneurship competed. The next steps will require comparable analysis of other regions of the world and close-up case studies of different promotions, underwritings, operations, and reorganizations.