

**International Capital and the Brazilian Encilhamento, 1889-1891:
An Early Example of Contagion among Emerging Capital Markets? ***

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Abstract

This paper assesses the role of international markets in the Brazilian financial crisis of 1891 (the “crack” of the Encilhamento). It looks for the impact of the Argentine default in 1890 (the Baring crisis) on Brazilian access to capital markets. The history of bond yield fluctuations in London for Brazilian and Argentine debt, exchange rates, data on investment flows and archival and journalistic accounts reveal a close congruence between the Argentine and Brazilian crises. The effects of the Argentine experience carried over to Brazil because the open capital and money markets of the period easily transmitted crisis from one economy to another and because fundamental conditions in both economies rendered them similarly vulnerable to fluctuations in capital flows. The paper raises this case as a precedent for the contagious financial crises that emerging markets faced at the end of the twentieth century.

International Capital and the Brazilian Encilhamento, 1889-1891: An Early Example of Contagion among Emerging Capital Markets?

The classical gold standard and open capital flows characterizing the international capital markets at the end of the nineteenth century created conditions that are analogous to those prevailing under the period of globalization a century later. Comparisons between these financial regimes, and the crises that they suffered, have recently become interesting to economic historians.¹ The most serious episodes of their respective periods, the Baring crisis of 1890 and the Asian crisis of 1998, are central to this research. “Contagion” of the 1998 crisis appeared to spread from one emerging market to another within a short period of time.² This paper explores the eruption of financial instability in Brazil during the early 1890s as a case study of contagion from the Baring crisis.³ Hypothesizing that the Argentine failure that initiated the Baring Crisis was an important determinant of the Brazilian crisis, this paper re-orientes our understanding of a very important episode of Brazilian macroeconomic history, and it addresses a neglected question in comparative international financial history.

In November 1890, the Baring crisis threatened the stability of London financial markets. Argentina’s suspension of international debt payment obligations in July 1890 triggered the failure of Baring Brothers’ massive investments in that country and ultimately the failure of the merchant

¹ Michael Bordo, et al., “Is the Crisis Problem Growing More Severe?” Rutgers University Money History Seminar, New Brunswick NJ, December 2000; Charles Goodhart and P.J.R. Delargy, “Financial Crises: Plus ça change, plus c’est la même chose?” *International Finance* 1, no. 2 (1998): 261-87.

² For just a selection of recently published NBER working papers on the subject see: Allan Drazen, *Political Contagion in Currency Crises*, NBER Working Paper no. W7211 (Cambridge MA: National Bureau of Economic Research, July 1999); Sebastian Edwards, *Interest Rates, Contagion and Capital Controls*, NBER Working Paper no. W7801 (Cambridge MA: National Bureau of Economic Research, September 2000); Kristin Forbes and Roberto Rigobon, *Contagion in Latin America: Definitions, Measurement and Policy Implications*, NBER Working Paper no. W7885 (Cambridge MA: National Bureau of Economic Research, September 2000).

³ This example also provides a case study for recent research that finds emerging economies to be less able than core economies to respond to either globalization or twin crises with strong and independent monetary policy. Michael D. Bordo and Marc Flandreau, *Core, Periphery, Exchange Rate Regimes, and Globalization*, NBER Working paper no. 8584 (Cambridge MA: National Bureau of Economic Research, November 2001); Olivier Jeanne and Charles Wyplosz, *The International Lender of Last Resort: How Large is Large Enough?* NBER Working Paper no. 8381 (Cambridge MA: National Bureau of Economic Research, July 2001).

banking firm.⁴ The liquidation of Barings' assets by the Bank of England with a consortium of London banks may have been the first coordinated bank bailout. In Argentina, this event was only one of many in a long financial crisis that began much earlier in the 1880s and did not reach its depth until the end of 1891. While bad business judgment and management lay behind the Baring Brothers' troubles, the wide array of economic problems within Argentina included the weak governance structures and credibility of the national government, monetary instability, and massive business fraud.⁵ The Argentine Treasury suspended international debt payments, as it had previously abandoned its short-lived adherence to the gold standard. Domestic markets were in disarray. As a result, the Argentine economy suffered a sharp deflation and lost its previously generous access to international capital markets. Repercussions of the Baring crisis were global⁶

Next door to Argentina, Brazilians suffered severe financial disruption the following year. Much traditional historiography cites the Brazilian crisis as beginning in February 1891,

⁴ The term "Baring crisis" commonly denotes the sequence of events that encompasses both the Argentine suspension of debt payments and the failure of the Baring Brothers. This usage can be confusing, since, as the paper shows, the two events may have resulted in separately identifiable effects. Despite the confusion, this paper retains the customary usage of the broader term "Baring crisis;" it isolates the debt payment suspension and the Baring failure, as necessary.

⁵ On the history of the Baring crisis see Philip Ziegler, *The Sixth Great Power: A History of the Greatest of All Banking Families, the House of Barings 1762-1929* (New York: A.A. Knopf, 1988, 229-43); Niall Ferguson, *The Pity of War* (London: Penguin Books, 1999, vol. 2, Chapter 11); J. H. Clapham, Sir, *The Bank of England, a History by Sir John Clapham..* (New York: <Eng.> The University Press; New York: The Macmillan Company, 1945, 325-27); David Kynaston, *The City of London* (London: Chatto & Windus, 1994); Rory Miller, "The London Capital Market and Latin American Public Debt, 1860-1930," in *La deuda pública en América Latina en perspectiva histórica*, ed. Reinhard Liehr (Frankfurt am Main Madrid: Vervuert Iberoamericana, 1995, 91-116); Carlos Marichal, *A Century of Debt Crises in Latin America: From Independence to the Great Depression, 1820-1930* (Princeton: Princeton University Press, 1989, Chapter 6). On the Argentine financial crisis see Alec G. Ford, *The Gold Standard, 1880-1914: Britain and Argentina* (Oxford: Clarendon Press, 1962); H. S. Ferns, "The Baring Crisis Revisited," *Journal of Latin American Studies* 24 (1992): 241-73; H.S. Ferns, *Britain and Argentina in the Nineteenth Century*, *European Business: Four Centuries of Foreign Expansion*, ed. Mira Wilkins (New York: Arno Press, 1977 [1960]); David Joslin, *A Century of Banking in Latin America; to Commemorate the Centenary in 1962 of the Bank of London & South America Limited* (New York: Oxford University Press, 1963), 117-57; Albert Fishlow, "Lessons from the Past: Capital Markets during the Nineteenth Century and the Interwar Period," *International Organizations* 39, no. 3 (Summer 1985): 381-439.

⁶ For example, the reaction of European investors to the circumstances in Argentina is often a primary factor invoked to explain the initiation of a major depression in Australia. N. G. Butlin, *Australian Domestic Product, Investment and Foreign Borrowing, 1861-1938/39* (Cambridge: University Press, 1962). Pedro Tedde de Lorca and Rafael Anes Alvarez, "La caída de la Casa Baring y la economía española a finales del siglo XIX," (*Hacienda Pública Española* 27 [1974]: 115-36) offers another example of the far-flung effects of the Baring crisis.

only three months after the Baring failure. A rampant monetary and stock market expansion, known as the Encilhamento, “cracked.” The local currency (the mil-réis) lost value, domestic financial markets were in crisis, and the banking system failed. Circumstances within Brazil at the end of the 1880s and beginning of the 1890s were sufficiently chaotic to justify expectations of financial crisis, without looking for external causes. The combination of the abolition of slavery, developmentalist efforts to expand both agricultural production (coffee) and industry simultaneously, inconsistent and inflationary monetary policies, large scale rural/urban and international migration, and the military overthrow of the Brazilian monarchy to establish a republic was not a prescription for stability.⁷

Nevertheless, a number of factors suggest that it would be useful to examine the relationship between the Brazilian and Argentine crises. Underlying fundamental conditions and the specific market dynamics that rendered Brazil vulnerable to Argentine financial crisis are the topic of this paper. Contemporaries and historians have cited the Baring crisis as an important cause for the disruption of capital flows throughout Latin America.⁸ Further, contemporaries of the crisis used the Argentine situation as an explanation for the increasing difficulty facing Brazil in accessing capital in London.⁹

Very recent research beginning to look into the extent to which emerging markets have been linked during these two time periods concludes that the co-movement of capital costs was

⁷ Among the vast literature on the fundamental social, political and economic chances of the First Republic, see Ângela de Castro Gomes and Marieta de Moraes Ferreira, “Primeira República: Um balanço historiográfico,” *Estudos Históricos* 4, no. 2 (1989): 244-80; Nelson Hideiki Nozoe, *São Paulo, economia cafeeira e urbanização: Estudo da estrutura tributária e das atividades econômicas na capital paulista (1889-1933)* Série Ensaios Econômicos / IPE/USP, vol. 39 (São Paulo: IPE-USP, 1984); Steven Topik, *The Political Economy of the Brazilian State, 1889-1930*, Latin American Monographs, Institute of Latin American Studies the University of Texas at Austin, No. 71 (Austin: University of Texas Press, 1987.)

⁸ *The Economist* (London, 12 July 1890, 890 and 14 November 1891, 1456); Marichal, *Century of Debt Crises*, Chapter 6.

⁹ Messrs. Rothschilds and Sons, Rothschilds Archive, London, Files XI/142-5 (24 April 1890 and 3 June 1891. Hereafter cited as RAL.)

greater at the end of the twentieth century than at the end of the nineteenth.¹⁰ The same work also finds that domestic political events were stronger determinants of risk premia than were international financial market conditions. The Brazilian example does not challenge this overall conclusion. Rather, it indicates that crisis in one economy could be transmitted to another during the earlier monetary regime, and it highlights the difficulty of dichotomizing domestic political and international financial conditions, especially in a small open economy.

Data

Whether defined as a sudden, large change in the price of financial instruments or more precisely in terms of the consequences of banking and/or currency crises, Brazil suffered crises during the 1890s.¹¹ Investors communicated their expectations about national circumstances through the returns that they required on financial instruments: bond yields, equities, currency exchange and domestic interest rates. In a small open economy, as Brazil was at the time, the price of financial instruments in international markets was at least as important in determining welfare as the price of domestic instruments.¹²

Yields on sovereign bonds traded in London and exchange rates provide the relevant data to study the effects of the Baring crisis on Brazil.¹³ The risk premium that investors required on sovereign debt, compared to the most risk-free alternative use of capital, conveys the clearest information on the financial standing of Argentina and Brazil in international financial markets. This measure isolates country risk from broad underlying shifts of the financial markets. The

¹⁰ Paolo Mauro, Nathan Sussman, and Yishay Yafeh, "Emerging Market Spreads: Then vs. Now," University of Jerusalem Working Paper, Jerusalem, September 2000.

¹¹ Mauro, Sussman, and Yafeh, "Emerging Market Spreads," uses a 10% monthly change in the risk premium; Bordo, et al., "Crisis Problem," offers definitions of banking and/or currency crises that are rooted in economic fundamentals. The data show that during these years, the timing of Brazilian crisis changes with the definition, but the occurrence of crisis does not.

¹² Equity price indices and domestic interest rate data are not available. The absence of data series reflects the depth of these markets, as well as the history of data collection efforts.

¹³ Although short-term interest rates may have been a more appropriate benchmark, these rates are not available. For Brazil, London long-term capital markets accepted only sovereign debt. RAL, XI/111/3 (7 January 1907, and XI/8/5, 1 September 1911.)

spread between the yields on sovereign bonds of each nation and the British consol defines the risk premium.¹⁴

Yield data are not commonly available on Brazilian or Argentine financial instruments.¹⁵ This paper uses weekly (bid) prices of bonds traded in London, allowing for the calculation of high frequency yields-to-maturity on Argentine and Brazilian instruments. The matching data series for the exchange rate between the British pound sterling and Brazilian mil-réis (quoted as pence/mil-réis) provides additional information.¹⁶ The weekly frequency has proven useful in demonstrating the anticipation and immediacy of market responses to changing circumstance. As the data show, investor access and responsiveness to political and economic information were immediate and obvious. The data run from 1889 to 1898. While the first years of this period are of most interest here, the longer time frame usefully demonstrates the fundamental reversal of the relative positions within international capital markets that occurred in the late 1890s, perhaps due to the differing responses of Brazil and Argentina to their crises.

For Brazil, the 4.5 percent sterling loan of 1888 is the bond that provides yield information. This loan, with an original term of 38 years, traded on the London exchange for the

¹⁴ The choice of using the yield or risk premium to assess the effects of financial instability during this period turns out to be unimportant; the results of the study do not change in any manner using either measure. (See Table 1.)

¹⁵ For Brazil, Eliana A. Cardoso and Rudiger Dornbusch, "Brazilian Debt Crises: Past and Present," in *The International Debt Crisis in Historical Perspective*, ed. Barry Eichengreen and Peter H. Lindert (Cambridge: MIT Press, 1989, Table 5.2) provides the only alternative source of data on bond price/yields (that I could find). The authors were kind enough to grant permission to use these data. The monthly frequency and problems confirming their citation mitigated against using them. New data series of monthly frequency covering a variety of emerging markets are currently appearing (Mauro, Sussman, and Yafeh, "Emerging Market Spreads."); these data conform with the data here.

¹⁶ *The Economist* published the price and exchange rate data, and they correspond to the trading prices as of the end of the week. For consol yields, this source corresponds to the monthly yields published in the standardly-used NBER monthly consol data series NBER, *Macro History Data Base*, Series 13041 (National Bureau of Economic Research). These exchange rates, averaged on a monthly basis, match very closely those reported in the standard source. (Instituto Brasileiro de Geografia e Estatísticas, Brasil, *Séries estatísticas do Brasil*, vol. 3, *Séries econômicas, demográficas e sociais de 1550 a 1985* [Rio de Janeiro, 1990], Table 11.10.)

entire period under consideration.¹⁷ Because the bond was issued – and repayable – in pounds sterling, investors assumed sovereign and market risk when buying these bonds, but eliminated the risk of currency fluctuation. For Argentina, a 5 percent loan issued in 1886, with original maturity of 1919 remained on the London market only until 12 October 1889; thereafter, its replacement, a 4.5 percent sterling bond (maturity 1926), offers the comparable data.¹⁸ The complementary series for the Brazilian exchange rate documents the connections between money (foreign exchange) and capital markets that demonstrates the mechanisms for the transmission of the Baring crisis from Argentina to Brazil.¹⁹ Existing research on contagion, discussed below, focuses on the information derived from the risk premium. However, since crises in money markets often accompany, and affect, crises in capital markets, the exchange rate data has proven a useful enhancement. Figures 1-3 graph various configurations of these data series, and Table 1 summarizes the relevant characteristics of the data.

In the early 1890s, the Baring crisis could have affected the Brazilian economy in three possible ways: capital flight, contagion or isolation (to use current terms.) If capital moved to Brazil because it fled the adverse circumstances in Argentina, the risk premium on the bonds of the two economies would fluctuate inversely with each other. As the data demonstrate, Brazil was not a destination for capital fleeing Argentina. Alternatively, two possibilities may cause investors' interest in Brazil to parallel their experience in Argentina. In the event that investors faced losses arising from the Argentine situation, they could develop a liquidity constraint that forced them to withdraw capital from Brazil. More indirectly, if the Brazilian economy caught the

¹⁷ Valentim F. Bouças, *História da dívida externa*, 2d ed. (Rio de Janeiro: Edições Financeiras, 1950), 118-19; Marcelo de Paiva Abreu, "A dívida pública externa do Brasil, 1824-1931," *Estudos Econômicos* (Instituto de Pesquisas Econômicas, Universidade de São Paulo) 15, no. 2 (1985): 167-89.

¹⁸ The yield calculation (as demonstrated in Figure 1) indicates that these bonds were consistently priced. A subsequent "gold loan" issued in August 1891 (not shown in Figure 1) restructured much outstanding Argentine debt and was more senior to the sterling loan. The pattern on this loan paralleled exactly that of the sterling-denominated debt, at a lower yield.

¹⁹ It would have been useful to have the analogous data for the Argentine exchange rate. However, reporting inconsistencies made that infeasible. The behavior of the Brazilian exchange rate is assessed relative to the risk premium on both Brazilian and Argentine bonds.

ills of the Argentine, then investors would change their expectations for (and behavior towards) Brazil to match the expectations that they had developed for Argentina. These outcomes would result in the risk premia of the countries' debt demonstrating an increasingly correlated relationship. A final possibility is that occurrences in Argentine financial markets would not affect their neighbor, with no meaningful change in the relationship between the risk premia.

Data constraints render it infeasible to test for the causal factors explaining the relation between the prices of the financial instruments of the two countries. Macroeconomic data that might serve as explanatory variables (such as trade, capital flows, prices) cannot match the weekly frequency of the risk premia and Brazilian exchange rate data.²⁰ Both the findings of this paper and of research on late twentieth century crises suggest that high frequency data are important; quarterly or annual data are insufficient to determine the timing of the relationships for purposes of studying financial crisis.

Brazil and Argentina Compared

The powers that be at Rio ... seem to have made up their minds that humdrum fiscal methods, though good enough for such effete countries as Great Britain, are scarcely worthy of a brand-new, free and enlightened republic; so Finance Minister Ruy Barbosa has recently been showing the world that the financial lessons taught by the Argentine Republic, and culminating in the loan mongering triumphs of the Celman band, have not been lost upon him.²¹

A stylized summary of Argentine and Brazilian economic history during the 1890s suggests that much, beyond sarcastic editorializing of the contemporary press, recommended similar views of the two economies. However, considering each economy individually, little anticipated that crises would occur nearly simultaneously or that, thereafter, rate fluctuation between their financial instruments should be increasingly synchronized.

²⁰ In fact, much of this data – of reliable quality – does not exist at all.

²¹ Arquivo Rui Barbosa; Ministério da Fazenda 85(3) (Rio de Janeiro, Fundação Casa Rui Barbosa. Hereafter cited as RB MF.) Article reprinted from the *Financial News* (London, 6 October 1890.) The *South American Journal* soundly rebuffed this editorial in its edition of 11 October 1890:

Brazilian credit has withstood the dreadful shock! ... we deny that, in the sense of gambling in securities on the Rio Exchange, the assertion is justified by any abnormal condition of affairs. If,

Through the late nineteenth century, the positions of Brazil and Argentina in international markets relied on their roles as primary commodity exporters. Brazil was the world's major producer of coffee²² (and rubber, for a few years.) Argentina produced and exported significant shares of the world's livestock, wool and wheat.²³ Although limited to well-defined geographic areas, analysts have accorded to export commodity production the role as the engine of growth in both economies.²⁴ The lure of economic opportunity made Argentina and Brazil the largest recipients of European capital and immigrants in Latin America.²⁵ Concentrated commodity exports affected their economic structures in fundamental ways, and may have influenced financial policy. Nevertheless, this structural similarity would not result in a hypothesis about the relationship between fluctuations of bond yields or risk. The variables influencing the supply and demand for coffee, wheat, wool and livestock were independent of each other and nothing

however, we are to understand that there is unprecedented activity in the formation of joint-stock enterprises, we have no difficulty in recording our concurrence. (RB MF 85 [3])

²² During the 1890s, Brazilian coffee production increased from about one-half to 70 percent of the global total. Winston Fritsch, *External Constraints on Economic Policy in Brazil, 1889-1930* (Pittsburgh: University of Pittsburgh Press, 1988), Table A.6.

²³ Argentine products did not enjoy the same dominance in world markets as did Brazilian coffee, due to competition from Australian and Canadian producers.

²⁴ The most rigorous comparative data available suggests that, by 1912, both economies saw approximately equal shares of their GDP coming from export earnings (33 percent in Argentina and 32 percent in Brazil. Victor Bulmer-Thomas, *The Economic History of Latin America since Independence*, Cambridge Latin American Studies, vol. 77 (Cambridge: Cambridge University Press, 1994) Table A.2.1. On Brazil and coffee, concentrated in São Paulo, see Wilson Suzigan, *Indústria brasileira: Origem e desenvolvimento* (São Paulo: Brasiliense, 1986); Wilson Cano, *Raízes da concentração industrial em São Paulo*; Corpo e Alma do Brasil, 53 (Rio de Janeiro: DIFEL/Difusão Editorial, S.A., 1977); Warren Dean, *The Industrialization of São Paulo, 1880-1945*; Latin American Monographs, No. 17 (Austin: Institute of Latin American Studies by the University of Texas Press, 1969). See John Fogarty, "Staples, Super-Staples and the Limits of Staple Theory: The Experiences of Argentina, Australia and Canada Compared" in *Argentina, Australia, and Canada: Studies in Comparative Development, 1870-1965*, ed. D. C. M Platt and Guido di Tella (New York: St. Martin's Press, 1985), 19-36; Guido di Tella, "Rents, Quasi-Rents, Normal Profits and Growth: Argentina and the Areas of Recent Settlement," in *Argentina, Australia, and Canada: Studies in Comparative Development, 1870-1965*, ed. D. C. M Platt and Guido di Tella (New York: St. Martin's Press, 1985), 37-52; Roberto Cortés Conde, *Progreso y declinación de la economía argentina: Un análisis histórico institucional*; Ed., Colección Popular 561 Buenos Aires: Fondo de Cultura Económica, 1998); Roberto Cortés Conde, *El progreso argentino 1880-1914* (Buenos Aires: Editorial Sudamericana, 1979) on Argentina, with its plains development in the Rio de la Plata region.

²⁵ Thomas H. Holloway, *Immigrants on the Land: Coffee and Society in São Paulo, 1886-1934* (Chapel Hill: University of North Carolina Press, 1980); Claudia G. Muscio, *Los inmigrantes en la Provincia de Buenos Aires* (Argentina: 1994), "Argentina: Un país 1998" on immigration. Irving Stone, "British Direct and Portfolio Investment in Latin America before 1914" (*Journal of Economic History* 37, no. 3 [Sept. 1977]: 690-722) is the best source on capital flows from Britain (the major source) for this period.

suggests that that the patterns of trade should be correlated among these commodities.

Furthermore, Argentina and Brazil were not substantial trading partners during these years.²⁶

Recent hypotheses about the importance of trade in transmitting financial crises²⁷ do not seem applicable in this case. Fluctuations in production in the two economies ought to be independent of each other, and not contribute significantly to change in the relationship between financial measures.²⁸

Nevertheless, common goals of creating the conditions to maximize commodity production and trade, industrialize and urbanize led Argentine and Brazilian economic policy to follow broadly similar paths during the 1880s.²⁹ They also suffered similar results. Contemporaries and subsequent scholars have believed that adherence to the gold standard eased the access to and lessened the cost of capital for the emerging economies of the period. The commitment to currency stability, playing by “the rules of the game,” reduced the risk of losses due to depreciation in the value of local currency and it implied fiscal stability that enhanced investors’ expectations of predictable and profitable markets.³⁰ In 1883, Argentina went on the gold standard; Brazil did so in 1888. Capital inflows increased, contributing to construction of

²⁶ In 1872/73 Brazilian exports to Argentina were 11 percent the value of exports to the United States and 8 percent of exports to Britain; in 1901 Brazilian exports to Argentina amounted to 5 and 17 percent the value of exports to the US and Britain, respectively. (Brasil, *Estatísticas históricas*, Table 11.3.)

²⁷ Christopher M. Meissner and J. Ernesto López Córdoba, “Exchange Rate Regimes and International Trade: Evidence from the Classical Gold Standard Era,” Center for International and Development Economics Research, University of California at Berkeley, Working Paper no. C00-18; Barry Eichengreen, Andrew K. Rose, and Charles Wyplosz, *Contagious Currency Crises*, NBER Working Paper no. 5682 (Cambridge MA: National Bureau of Economic Research, 1996).

²⁸ The long-term global depression of commodity prices during the 1890s may have added to the difficulty (and perceptions of difficulty) for both countries to service international through much of the decade. However, international coffee prices increased from 1889 through 1891 and did not begin a sustained decline until 1892, well after the immediate events of the Baring crisis. (See Table 2.)

²⁹ See J.P. Wileman, “Brazilian Exchange,” in *Brazilian Exchange: The Study of an Inconvertible Currency* (New York: Greenwood Press, 1969 [1896], 211-13) for a contemporary’s (highly stylized) appreciation of the parallels between Argentine and Brazilian financial experience.

³⁰ Michael D. Bordo and Hugh Rockoff, “The Gold Standard as a ‘Good Housekeeping Seal of Approval’,” *Journal of Economic History* 56, no. 2 (1996): 389-428. Incremental capital could enter through two avenues: sovereign borrowers could issue debt in international money centers (portfolio investment), and the then-emerging economies could offer direct investors the prospect of reduced risk of loss due to currency depreciation.

infrastructure networks of railroads, ports, real estate development, urban water supply and sanitation services, as well as the construction of local industry to support the changing consumption needs of the population.³¹

In both economies, along with the growth associated with incremental capital, indications of instability appeared. Commodity production and industrialization fuelled expectations. Vastly expanded and frenzied trading of money, equity shares and real estate blurred the distinctions between transactions supported by real economic activity and speculation. While rapid corporate formation aided production, failures were also frequent and fraud flourished in the free-dealing environment.³² Price inflation reached levels that alarmed policy makers and consumers. In retrospect, the possibilities for market collapse seem obvious.

Simultaneously, both countries also experienced significant political instability. Changes of political regime were associated with both countries' inability, or unwillingness, to maintain their adherence to the gold standard. In March 1885, the Argentine treasury suspended the convertibility of paper pesos into gold (though not yet formally abandoning the gold standard),³³ and Miguel Juárez Celman's assumption of the presidency in 1886 ushered in expansive monetary policy. At the end of 1887, the Law of National Guaranteed Banks allowed banks to issue fiduciary money, though the gold standard was not formally abandoned until 1888. Then, in July 1890, Argentina's moratorium on debt service payments ushered in twin crises of the

³¹ For comparative general data on British investments in Brazil and Argentina (believed to be the largest source of foreign investments) see Irving Stone, *The Global Export of Capital from Great Britain, 1865-1914: A Statistical Survey* (New York: St. Martin's Press, 1998); Stone, "Direct and Portfolio Investment."

³² On the environment conducive to free wheeling note-issuance, securities trading and shady dealing in Argentina, see Ford, *Gold Standard* (99-101); J.H. Williams, *Argentine International Trade under Inconvertible Paper Currency, 1880-1900* (Cambridge MA: Harvard University Press, 1920 [72, 120]; Ferns, *Britain and Argentina* (Chapter XIV revised in; Ferns, "Baring Crisis Revisited," 248-56.) On Brazil, see Topik, *Political Economy* (31-33); Carlos Manuel Peláez, "As consequências econômicas da ortodoxia monetária, cambial e fiscal no Brasil entre 1889-1945" (*Revista Brasileira de Economia* 5, no. 3 [July-Sept. 1971]: 20); Maria Bárbara Levy, *História da Bolsa de Valores do Rio de Janeiro* (Rio de Janeiro: IBMEC, 1977, Chapter IV); *Economist* (14 February 1891, 207) or the very engaging novel Alfredo de Escagnolle Taunay, *O Encilhamento: Cenas contemporâneas da Bolsa do Rio de Janeiro em 1890, 1891 e 1892* (Grandes Textos de Literatura, 4 [Belo Horizonte: Editôra Italiaia, 1971]).

³³ The first informal break from gold had occurred shortly before, in January 1885, with the first appearance of a premium on gold, over paper, pesos. (Ford, *Gold Standard*, 134.)

currency and the banking system. A month later Carlos Pellegrini assumed the presidency after Juárez Celman's resignation and introduced a sustained commitment to orthodox monetary and fiscal policy. In Brazil, the military overthrow of the monarchy in favor of a republic in November 1889 was quickly followed by the effective abandonment of the gold standard in January 1890.³⁴ At the same time, bank reform laws expanded note issuance rights and allocated them to regionally dispersed banks.³⁵ A month after another round of bank reforms in December 1890, consolidating note issue rights and formally recognizing the inability to maintain the gold standard, the first republican finance minister, Rui Barbosa, was out of office.³⁶ In November 1891, after another military coup, Floriano Peixoto became President of Brazil, with a return to monetary and fiscal orthodoxy at the core of his goals.³⁷

Investors apparently reacted to this common trajectory of political and economic history with similar trends in their behavior. Capital flowed into both countries; trade, infrastructure and real estate development within commodity-producing regions boomed. However, the timing of commitment to the gold standard, of political regime change, and of commodity trade fluctuations, differed significantly. In general, Argentine activity occurred in advance of the Brazilian. The difference in timing was greatly in excess of the time required for financial markets to equate the actions. Most notably, Argentina went on the gold standard in 1883, and off

³⁴ The initial financial policy articulated by the republican government formally maintained the gold standard; however, the credibility of the state evidently was ruined, as demonstrated by the fall of the market exchange rate in London. The London market reacted to the military coup by immediately requiring a sharply increased risk premium.

³⁵ Gustavo Henrique Barroso Franco, *Reforma monetária e instabilidade durante a transição republicana*, 2d ed. (Rio de Janeiro: Banco Nacional de Desenvolvimento Econômico e Social, 1987 [1983]), 101-09; Topik, *Political Economy*, 31-32.

³⁶ As a leading member of the small group organizing the Republic, with political influence extending well beyond monetary issues, Barbosa's departure from the Treasury has to be considered of greater political importance than a mere shifting of personnel. Franco, *Reforma monetária*, 131-32.

³⁷ Peláez, "Consequências econômicas," 19; Rui Barbosa, *Finanças e política da República: Discursos e escriptos* (Rio de Janeiro: Companhia Impressora, 1892). For purposes here, the coup bringing Peixoto to the presidency is dated at 23 November 1891, the proclamation of his presidency, rather than 3 November 1891, when fighting for control of a new government began.

it in 1885 (officially, in 1888); Brazil went on gold five years after Argentina, in 1888, and abandoned it thirteen months later in January 1890.³⁸

While the dynamics of the Argentine and Brazilian financial markets were similar at the end of the 1880s, investors also understood the markets to be very different. They judged Brazil to be a notably stronger borrower than Argentina: "...Brazil has not been so viciously financed as the River Plate."³⁹ Although rendered small by future experience, the 45 to 65 basis point difference between the risk premia of the two countries on the London bond markets was significant, relative to their levels at the time (of about 1.8 to 2 percent and 2.5 percent for Brazil and Argentina, respectively. See Figures 1 and 3.) The burden of international debt was lower in Brazil. In 1890, federal debt service obligations accounted for 24 percent of export revenues in Argentina and 11 percent in Brazil.⁴⁰ Further, Brazilian credit history through the nineteenth century was strong; they had not defaulted on international debt. This background was in strong contrast with Argentine default in 1827 and the apparently more difficult passage through the global recession of the 1870s prior to the debt payment suspension of 1890.⁴¹

Overall, Brazilian and Argentine economic and policy trajectories followed roughly parallel courses. However, neither their economic structures nor the timing of policy actions predict that financial crises in these economies should be related to each other. If market crises were inevitable in both economies, there is no reason that they should have occurred almost simultaneously. And yet, they did.

The Brazilian Encilhamento and its Crack

³⁸ In addition to the differences in timing, a "learning effect" ought have influenced investors. *The Economist* suggests the same:

It is, indeed, a matter of regret to find the new Brazilian Republic following the same course [that brought about the Argentine collapse]. Fortunately, however, investors here are now able to form a true estimate of the value of such securities, and are little likely to repeat the mistake they made in taking up Argentine issues. (*Economist*. 30 August 1890, 1111, see also 4 April 1891, 434.)

³⁹ *Economist*; 14 November 1891, 1456.

⁴⁰ Cortés Conde, *Progreso y declinación*, Table 10; Brasil, *Estatísticas históricas*, Tables 11.1 and 11.7. Ford (*Gold Standard*, 14) states that total Argentine debt service obligations reached 60 percent of export earnings. The comparable figure for Brazil in 1890 was 30 percent.

“Encilhamento” is slang used in Brazilian horseracing circles to refer to the saddling up of the horses, getting them ready to break out of the opening gate. The term also applies to the experience in Brazilian economic history beginning in 1889 when monetary and stock market expansion seemed unrestrained. The “crack” of the Encilhamento in 1890/91 resulted in collapses of the exchange rate and the equities exchange, and massive failures of the companies traded on the exchange. Table 2 documents the rapid expansion and collapse of the first few years of the Republic.⁴² These limited data reveal that the reversal of the securities exchange preceded the declines experienced in the real economy; but both suffered serious setbacks. By 1892, after doubling in 1890, the Rio de Janeiro Bolsa de Valores listed fewer companies than it had in 1888; and only one more bank remained listed than in 1888, after having almost tripled. Standards of living, as indicated by real GDP and GDP per capita, suffered sharp falls from 1891 to 1893 (of 26 and 30 percent, respectively) that had prolonged effects.⁴³ While these data are of dubious quality, and ought be interpreted only very roughly, most data sources concur with their direction and order of magnitude during the years under consideration. Fairly extensive historiography attempts to explain the Encilhamento and its crack by examining domestic economic circumstances.

⁴¹ Marichal, *Century of Debt Crises*, Table 2 and 104-06.

⁴² Annual data are the best available. The data requiring estimation (price levels, and GDP measures), as opposed to that relying entirely on accumulation, should be used only indicatively. The estimation problems with these series are serious. To the extent possible, Table 2 includes alternative data sources for purposes of comparison.

⁴³ The sharp declines occurred after rapid increases in the previous years: real GDP and GDP per capita grew 19 and 15 percent, respectively. According to the Goldsmith data, GDP per capita did not reach its 1891 level again until 1912. (Taking a more normalized five-year average of GDP per capita for the 1887-1891, Brazilians did not reach this standard again until 1909.) See Raymond W. Goldsmith, *Brasil 1850-1984: Desenvolvimento financeiro sob um século de inflação* (São Paulo: Banco Bamerindus e Ed. Harper Row do Brasil, 1986), Table III-1 for the longer data series. The order of magnitude of the decline suggests serious declines in real standards of living. Carlos Manuel Peláez and Wilson Suzigan, *História monetária do Brasil: Análise da política, comportamento e instituições monetárias* (Instituto de Planejamento Econômico e Social. Instituto de Pesquisas, Monografia No. 23 [Rio de Janeiro: IPEA/INPES, 1976], 157) also makes the point that real standards of living declined from 1892.

Expansionary monetary and bank reform in November 1888 and early 1890 led to inflationary money growth.⁴⁴ With policy that was “flagrantly contradictory”⁴⁵ monetary authorities both committed to a fixed exchange rate and expanded bank note issuing rights in 1888. The reforms of January 1890 consolidated the regional distribution of note issuing rights and specifically established the ability of note issuing banks to engage in universal banking. The nominal money supply doubled between 1889 and 1890; and then, it almost doubled again the following year. Banks contributed significantly to the increase in money. The share of the money supply from bank deposits moved from 47 to 74 percent between 1888 and 1890. Note issuing authority changed twice during these three years, indicating both monetary and institutional instability.⁴⁶ Some find the inflationary monetary expansion to be the defining characteristic of the Encilhamento.⁴⁷

At the same time, revision of the Commercial Code vastly eased the formation of limited liability joint stock corporations.⁴⁸ Because of the eased monetary laws, investors chartered banks and traded bank equity shares much more than other types of businesses. The corporations registered on the Rio de Janeiro Bolsa de Valores realized a net increase of 61 between 1888 and 1890; 30 of these companies were banks. Nevertheless, industrial, infrastructure and other types

⁴⁴ Brasil, *Coleção das Leis e Decretos* (hereafter cited as *Leis e Decretos*), Decreto No. 3403, November 1888 and Decreto No. 164, January 1890.

⁴⁵ Franco, *Reforma monetária*, 63.

⁴⁶ The monetary laws of 1888 and 1890 transferred note-issuing responsibility. Another change occurred in 1891.

⁴⁷ Bouças, *História da dívida externa*, 141; Peláez and Suzigan, *História monetária*, 143-45. At the same time, recent research in international finance finds domestic monetary policy to be ineffective in twin crises (Jeanne and Wyplosz, *The International Lender of Last Resort*).

⁴⁸ *Leis e Decretos*, Decretos Nos. 164 and 165; Stephen Haber, “The Efficiency Consequences of Institutional Change: Financial Market Regulation and Industrial Productivity Growth in Brazil, 1866-1934,” in *Latin America and the World Economy in the Nineteenth and Twentieth Centuries*, ed. John H. Coatsworth and Alan M. Taylor (Cambridge: Harvard University Press, 1998) 275-322; Stephen Haber, “The Political Economy of Financial Market Regulation and Industrial Productivity in Brazil, 1866-1934,” in *Political Institutions and Economic Growth in Latin America: Essays in Policy, History and Political Economy*, ed. Stephen Haber (Stanford CA: Hoover Institution Press, 2000) 69-121. These sources focus on the increased efficiency and productivity for manufacturing concerns (specifically, textiles) as a result of the institutional changes embedded in the reformed Commercial Code.

of companies also swelled the ranks of the exchange.⁴⁹ The growth of limited-liability corporate formation and trading in equity shares has led some scholars to typify the Encilhamento as a period of fundamental economic development and industrialization, with the collapse of financial markets providing a negative shock that fuelled an early period of import substituting industrialization.⁵⁰ Others, continuing with a developmentalist interpretation of the experience, characterize the reforms as an “unshackling of financial markets” and a merger movement.⁵¹ These interpretations of the shift in institutional structures and economic development underscore the complexity of financial development, rather than conflicting with research on the effects of international capital markets in open economies. Still others, focusing on the unrestrained speculation (and a fair amount of fraud) in financial instruments, view the period as a “bubble”.⁵²

Some contemporaries characterized the package of policies as “an experiment that will be gradually improved.”⁵³ By 1890, necessity generated a number of changes. As early as the January reforms, the gold standard was abandoned. However, the general tendency of financial policies reversed again by the middle of the year, in efforts to regulate domestic markets and introduce gradually deflationary policy. By October 1890, paid-in capital requirements for publicly registered and traded companies increased from 10 to 30 percent of statutory capital. In December, the consolidation of note issuing banks into the newly formed Banco da República

⁴⁹ These data represent the surge in corporate formation. They should not be interpreted as new business formation, since many (though an undetermined number) were existing businesses that re-organized to take advantage of the eased ability to form limited liability joint stock companies. These also represent the net change; the number of companies failing during these years is not readily available.

⁵⁰ Albert Fishlow, “Origins and Consequences of Import Substitution in Brazil,” in *International Economics and Development: Essays in Honor of Raúl Prebisch*, ed. Luís Eugenio di Marco and Raúl Prebisch (New York: Academic Press, 1972), 311-65.

⁵¹ Topik, *Political Economy*, 28, and Steven Topik, “Brazil’s Bourgeois Revolution?” *The Americas* 48, no. 2 (Oct. 1991), respectively. The extent and nature of mergers resulting from the Encilhamento remain undocumented, and deserve research.

⁵² *Economist*, 23 May 1891, 663; Eulália Maria Lahmeyer Lobo, “O Encilhamento,” *Revista Brasileira de Mercado de Capitais* 2, no. 5 (May-Aug. 1976): 261-301; Maria Bárbara Levy, “O Encilhamento,” in *Economia brasileira: Uma visão histórica*, ed. Paulo Neuhaus (Rio de Janeiro: Ed. Campus, 1980) 191-256; Levy, *História da Bolsa de Valores*.

⁵³ *Retrospecto Comercial de Journal do Comércio*, Annual Series (Rio de Janeiro: *Jornal de Comércio* de Rodrigues e Cia. Hereafter cited as *RC.*), 1889, 6.

was an attempt to gain control over money creation. A transaction tax on share trading in February 1891 explicitly tried to slow the frenzied trading on the Bolsa de Valores.⁵⁴

International financial conditions that could have interacted with the volatile domestic markets during the Encilhamento have received surprisingly little attention. The limited evidence on the volume of international capital flows to both the public and private sectors suggests the importance and vulnerability of foreign sources of capital (Table 3.) Substantial inflow from the mid-1880s stopped immediately in 1890.⁵⁵ While sovereign lending began again in the mid-1890s, private sector direct investment did not resume, to a significant extent, until a few years later. Some have noted the impact of currency devaluation from 1890 for both public loans and private direct investment.⁵⁶ Franco (1983) is the only scholar to emphasize the international aspects of the Encilhamento and its crack.⁵⁷ He finds domestic monetary factors an unconvincing explanation for the strength and timing of the crack of the Encilhamento. The annual pattern of public and private capital flows – with a strong surge in the period 1886-89 and almost a complete halt during the years 1890-94 – convince Franco that the effects of the Baring crisis on Brazil's position in international capital and money markets were crucial.⁵⁸ The scope of this work does not extend to a more detailed consideration of the issue. However, it does give rise to the suggestion that the Baring crisis may have served as a “wake-up call” for investors to reconsider the nature of their investments in emerging economies.

⁵⁴ These efforts were codified in *Leis e Decretos* (Decreto Nos. 850, 1151 and 1362, respectively.) For their implications see Peláez, “Consequências econômicas;” Barbosa, *Discursos*, 88; Levy, “Encilhamento;” Levy, *História da Bolsa de Valores* (Chapter 4.)

⁵⁵ The data do not allow a more precise timing of the change in capital flows.

⁵⁶ Fritsch, *External Constraints*, 4-6; Gustavo H.B. Franco, “A primeira década republicana,” in *A ordem do progresso: Cem anos de política econômica republicana, 1889-1989* (Rio de Janeiro: Ed. Campus, 1990) 11-30; Franco, *Reforma monetária*.

⁵⁷ It is especially interesting that Franco should have emphasized this point. He resigned the presidency of the Brazilian Central Bank in protest of the 1999 floating and devaluation of the currency.

⁵⁸ Franco, *Reforma monetária*, 140-41. Surprisingly, both Albert Fishlow, “Conditionality and Willingness to Pay: Some Parallels from the 1890s,” (in *The International Debt Crisis in Historical Perspective*, ed. Barry Eichengreen and Peter H. Lindert [Cambridge: MIT Press, 1989] 86-105) and Cardoso and Dornbusch, “Brazilian Debt Crises” do not consider the underlying issues that may have connected the Baring crisis and the crack of the Encilhamento.

The effects of abandoning the gold standard, as part of the monetary reforms of January 1890, have not received attention for their role in the Encilhamento. Nevertheless, going off of gold initiated an immediate, though not decisive, fall in the value of the mil-réis (Figure 2). During 1890, the international financial environment turned decidedly hostile to countries that did not maintain currency value and policy commitments. The connection from crisis in Argentina to currency and domestic financial (equities and banking) crises in Brazil required the transmission agent of the London money and capital markets.

London Markets and Brazil

Visual inspection of high frequency data offers compelling evidence to support the hypotheses that the London financial markets immediately registered and incorporated political and economic circumstances in the emerging markets of the period and that the Argentine financial crisis affected Brazil. During the last decade of the nineteenth century, Brazilian and Argentine risk premia became closely correlated, when they had not been correlated previously. However, these relationships were not constant. Close consideration of the trajectories of the Brazilian risk premium and exchange rate is revealing (Figure 2), with careful attention to adjust for the effects of the scale required to accommodate the Argentine crisis in Figure 1.

London investors in Brazilian debt required incremental compensation for the added uncertainty created by the political upheaval when the military overthrew the Brazilian monarchy on 15 November 1889. During the week of the coup, the risk premium increased by more than one-quarter, from 1.72 to 2.26 percent;⁵⁹ in the six weeks between the end of the Empire and the end of the year, the risk premium almost doubled, to 3 percent. This increased yield spread occurred suddenly, reversing a gradual decline from the beginning of 1889. In anticipation of monetary and banking reforms that took Brazil off the gold standard at the beginning of 1890, the

⁵⁹ Using a comparable measure, Forbes and Rigobon, *Contagion in Latin America* (4 and Figures 2 and 3) find among a selection of Latin American emerging markets that the *minimum* risk spread on long term bond yields from October 1994 to July 1999 was 300 basis points. Forbes and Rigobon find an even higher

risk premium saw another incremental jump of almost 25 percent (62 basis points) in the second half of December. Although the premium quickly began to moderate, it remained permanently higher than the months immediately preceding the end of the Empire.⁶⁰

The value of the mil-réis followed a slightly different pattern during the tumultuous transition from Empire to Republic. The exchange rate between sterling and the mil-réis held steady for a few weeks before beginning its sharp – and long – slide from almost 28 pence/mil-réis (above the gold standard par of 27 pence). Abandoning the gold standard in January 1890 motivated strong currency deterioration. Perhaps in anticipation, the mil-réis began its decline and the risk premium experienced a minor spike at the end of December 1889, shortly before the enactment of new legislation. In the subsequent months, the mil-réis lost almost one-quarter of its value, declining to 20.5 pence at the end of April 1890.

During the Encilhamento,⁶¹ the effects of rampant monetary expansion and exchange speculation that commanded attention in domestic financial markets had inconsistent international results. Theory would predict unambiguous increase of the risk premium and decline in the exchange rate. The British financial press and the Rothschilds (merchant bankers for the Brazilian Treasury) expressed this concern, and they often compared circumstances in Brazil to those in Argentina:

degree of “co-movement” and stability of the spread between risk premia than seem to have occurred in the Baring crisis; however, the patterns are similar.

⁶⁰ Similarly, the risk premium on Argentine debt increased by about fifty-percent during the week that the Baring Brothers negotiated their bailout with the Bank of England and London bankers. Unlike the Brazilian situation, the financial markets had been keeping abreast of deteriorating circumstances in Argentina. The risk premium had been increasing gradually since April 1890, when the debt rescheduling and Buenos Aires Water and Drainage Co. problems had become prominent.

⁶¹ This assessment is not sensitive to the difficulty of dating the beginning of the Encilhamento. If one accepts an analysis that banking and monetary reforms of 1888 initiated the Encilhamento, then the risk premium and exchange rate experience through 1889, suggests surprising tranquility in international markets. If the reform of the Commercial Code – co-incident with effectively abandoning the gold standard – in January 1890 connotes the beginning of the Encilhamento, then the time lapse until strong rate fluctuation begins was shorter and the story is somewhat less compelling, but does not change in interpretation. For purposes here, I assume the weaker story that the Encilhamento can only be considered in full swing after the beginning of the Republic.

Those interested in the stability of Brazilian finance are beginning to fear, and not without some cause, that the same policy of currency inflation that has brought the Argentine Republic to grief is being pursued by the Brazilian government. The latest step in this direction was the issue on the 7th December last, of a decree, the effect of which may add from £40 million to £45 million to the paper currency. And this is only one of a series of Decrees... On 25 September, came a new Decree, authorising additional issues of paper money, and again speculation responded by becoming more rampant than ever...

And:

The Bankers Commission ... recommended that no further companies be encouraged, that existing companies be assisted and that they be consolidated wherever possible, that shareholders be assisted by diminishing liabilities and extending payments, and that good paper be accepted as collateral ... granting assistance to the speculator to secure his gains, and carry on his delusive operation.... There is not *real* capital and industry enough in the country to support such pretensions!⁶²

Markets communicated somewhat different information. Although demonstrating more fluctuation than prior to the transition of political and monetary regimes, the risk premium component of the bond yield was relatively stable, compared to standards of later in the decade (see Table 1.) With periods of decline during early 1890, the risk premium remained between the bounds of approximately 2.2 and 2.7 percentage points from the beginning of 1890 and continuing through the Argentine suspension of debt payments.⁶³ By the time that Argentina suspended payments, the risk premium on Brazilian debt had fallen back to the same range as in the month after the establishment of the Republic (approximately 240 basis points.) The premium began a sustained increase in September, and continued, despite the tightening policy measures at the end of 1890. The chronology of Brazilian monetary experience and policy does not offer an explanation for the timing of this reversal, the failure of Argentine debt appears to have been its proximate event.

⁶² *Economist*, 10 January 1891, 36 and 23 May 1891, 663 ([italics in original text.]) See also 4 April 1891, 434, for another example of this opinion.

⁶³ In fact, the Brazilian risk premium and exchange rate showed slight improvement immediately upon the Argentine suspension. This offers weak evidence for a hypothesis short-term capital flight to Brazil. However, while Brazilian finances were in better shape than Argentine, at this time, they seem unlikely to have offered a confident picture of stability to investors. Neither does the London financial press consider this possibility.

Initially, the trend of the exchange rate aligned more closely with expectations, decreasing sharply through the first half of the year; it also exhibited increased fluctuation. (See Table 1 and Figure 2.) However, during the second half of 1890, co-incident with the attempt to tighten policy, the value of the mil-réis experienced two short periods of pronounced increase. By the time of the Baring failure, the mil-réis had re-gained 60 percent of the value that it had lost since abandoning the gold standard. These patterns do not conform to hypotheses that the London money markets assessed Brazilian news about the Encilhamento severely. Rather, the slow overall net improvement through much of the year suggests that investors rewarded the regulatory and timid deflationary moves in the money markets. The benefits to policy actions ceased during the last months of 1890, in a pattern apparently unrelated to the continued tightening of domestic policy.

Brazilians felt the effects from the Baring failure immediately. The mil-réis declined in value by 5 percent on the London market during the week that the failure became public. Casual observation of Figure 2 suggests the Baring failure as the beginning of the sharp unrelieved decline of the mil-réis, from approximately 24.5 pence at the time of the crisis to a (temporary) low of 11.5 pence at the end of 1891. The risk premium continued its sustained increase, although in a more modest trend than the dramatic exchange rate history. Table 1 confirms the increased volatility that both the Brazilian risk premium and exchange rate experienced in tandem with the Baring crisis (standard deviations almost quadrupled and doubled, respectively.)⁶⁴ Between the Baring crisis and the next marker of a regime change (the coup of 1891, one year later) the risk premium realized 54 percent of its total deterioration from 1889 to 1898, and the exchange rate loss was 63 percent of the total for the decade. The chronology of events that might affect markets for Brazilian securities suggests this as a busy period. In fact, the Finance Ministry was in the midst of negotiating a re-financing of an existing loan, which did not occur because of the

⁶⁴ These results are insensitive to the dating of the crisis with the debt payment suspension or the Baring Brothers failure.

disruption to capital markets because of the crisis.⁶⁵ However, nothing suggests the first week of November (the announcement of the Baring failure) as a specifically turbulent period for Brazil that would account for a shift as sudden, deep and prolonged as the change that occurred. Rather, the abrupt change in the exchange rate trend appears to signify that the Baring failure contributed to the aborted Brazilian attempts to institute a gradual regime shift.⁶⁶

Another strand of historiography, interpreting the Encilhamento through the lenses of corporate formation and activity on Brazilian securities exchanges, dates its “crack” to 14 February 1891.⁶⁷ The military government began its strongest attempt to control and limit trading on the Bolsa de Valores by introducing a tax on all equity share transactions.⁶⁸ A strike by the brokers on the Rio de Janeiro Bolsa resulted in the repeal of the tax. Nevertheless, the move was successful in initiating (or at least coincided with) the decline of activity on the Bolsa de Valores.⁶⁹

In London, investors recognized this “crack” of the Encilhamento with a yawn. By February, the value of the mil-réis had realized more than one-third of its total decline during 1891. The risk premium on Brazilian bonds and the sterling-denominated value of the mil-réis continued their deterioration until October. Further, within the first three weeks after the disruption on domestic Brazilian markets, the risk premium actually declined slightly. The international reaction to events in the Brazilian markets was very mild and did not indicate a judgement that circumstances had altered. However, just as events that might be expected to contribute to accelerated deterioration seemed to have little impact in international markets,

⁶⁵ *RC*, 1891: p.1; *Economist*, 22 November 1890, 1261. Curiously, Franco, *Reforma monetária*, 187, says that the restructuring of the Baring Brothers was not discussed in the *Jornal de Comércio* (the major business newspaper of Rio de Janeiro) until 17 February, nine days after the event. Given the speed of communication of other financial news (and market prices) this seems quite remarkable, and requires further research.

⁶⁶ One need not assume that the regime change would have been successful for this conclusion to hold.

⁶⁷ Levy, *História da Bolsa de Valores*, 168-71; Barbosa, *Discursos*, (“O papel e a baixa do cambio”), 94.

⁶⁸ *Leis e Decretos*, Decreto No. 1362.

⁶⁹ Levy, *História da Bolsa de Valores*, 168-72; *RC*, 1891, 4.

continued efforts to control domestic finance lost their ability to reap benefit. After the Baring crisis, policy tightening, such as the efforts to consolidate note issuing rights in December 1890 and again in May 1891,⁷⁰ did not have the same effect as weaker moves to control the money markets earlier in the year.

After the crisis, through the remainder of the 1890s (or at least until the Refunding Loan in 1898) significant changes in the cost of capital and money for Brazil closely followed the trajectory of politics and the associated monetary policy.⁷¹ In November 1891, a military coup overthrew the first republican government of Brazil. Financial instability was the most prominent factor motivating the coup.⁷² The new government initiated deflationary orthodox monetary policy and tried to centralize note-issuing rights in the highly fragmented banking system. London investors communicated their appreciation of the change in government and policy. After a short period of rapid deterioration in the midst of the coup, the exchange rate stabilized in the range of 11-12 pence. The risk premium nearly doubled from 3.2 percent in September 1891 to its peak of 6.04 percent in the week of the coup. Half of the increase (from 4.51 to 6.04 percent) was a spike that fell back to 4.52 percent within two weeks.⁷³

Although uneven and suffering occasional setbacks, the new government of Floriano Peixoto seemed to address Brazilian financial problems to the relative satisfaction of international investors. The risk premium declined gradually (though with an important reversal during the second and third quarters of 1893.)⁷⁴ By the end of 1894, the spread on Brazilian bonds relative to

⁷⁰ Peláez, “Consequências econômicas,” 19.

⁷¹ This corresponds with the finding that, in general, domestic circumstance was relatively more important than the influence of international financial markets in explaining risk premium movement during the classical gold standard era, as compared to the relative importance of these factors at the end of the twentieth century. (Mauro, Sussman, and Yafeh, “Emerging Market Spreads”)

⁷² Peláez, “Consequências econômicas,” pp 19-20; Topik, *Political Economy*, 33; *Economist*, 7 November 1891, 1428 and 14 November 1891, 1456.

⁷³ By the time of the coup, Argentine economic reforms were sufficiently in place, that the Brazilian situation did not disrupt Argentine markets.

⁷⁴ The broad swings of the risk premium seemed to correspond roughly with the tenures of the three Finance Ministers within the Peixoto administration and their associated perspectives on the accessing international capital markets.

British consols was in the range of 3.2 to 3.3 percent. While the decline in the mil-réis did not reverse for the remainder of the decade, the Peixoto government benefited by a slowing of the depreciation.

From November 1894, London financial markets registered another change in Brazilian circumstances. The contraction in the world economy affected Brazil as it had many small, open countries. From 1895, the sharp and long-term fall of coffee prices added to Brazil's deteriorating position in international financial markets.⁷⁵ The cycle of declining commodity earnings, with negative effects on the ability to service debt, had a predictable effect on the ability to attract capital. The new (constitutionally elected) government of Prudente de Moraes re-initiated expansive monetary and fiscal policies.⁷⁶ The risk premium on bonds reversed its slow improvement and the value of the mil-réis continued its long-term decline. As Figure 1 indicates, these trends remained fairly consistent until Brazilian debt was rescheduled with the Funding Loan of 1898. A sharp short deterioration in the prices of Brazilian securities anticipated the Funding Loan in a manner similar to, if less strong than, that experienced by the Argentines in 1891.

The spread between the risk premium required on Argentine and Brazilian bonds⁷⁷ brings the experiences of the two economies into comparative perspective. (See Figure 3.) Investors continued to regard Brazil as a less risky destination for their capital than was Argentina for most of the 1890s. The sharply increased differential that attended the Argentine monetary and banking reforms in 1891, beginning early in 1890, is hardly surprising in light of Argentina's suspension of debt payments and the relatively sanguine attitude investors took toward Brazilian finances.

⁷⁵ Average coffee prices fell from US\$0.166 per pound in 1895 to US\$0.111 and US\$0.075 in 1896 and 1897, respectively. The price did not reach US\$0.10/lb. again until 1910. Fritsch, *External Constraints*, Table A.6.

⁷⁶ This change in policy direction may have been exacerbated by weak governance structures. Rodrigues Alves, the first Finance Minister of the Peixoto regime, who initiated orthodox policy, re-assumed the Finance Ministry maintaining his earlier orthodox monetary ideology. However, increased borrowing and note-issuance belied these intentions. Peláez, "Consequências econômicas," 22-23.

⁷⁷ The spread is defined as $\text{Risk Premium}_{\text{Arg}} - \text{Risk Premium}_{\text{Brazil}}$.

However, the spread between the Argentine and Brazilian risk premia did not return to its pre-crisis level. Although falling rapidly with the successful re-negotiation of Argentine debt, the spread fluctuated strongly and the differential between the rate premia remained significantly higher than it had been prior to the crisis. Even with the increased risk-component required on Brazilian bonds and the improved perception that benefited Argentine debt, the cost of the crisis for Argentina was prolonged, in comparison with its crisis-prone neighbor.

Gradually, the combination of successful re-structuring in Argentina⁷⁸ and Brazilian inability to maintain monetary policies and growth conditions favorable to investors resulted in a reversal of the comparative assessments offered by the risk premia. From 1892 through 1894, the London financial markets reflected the complicated patterns of Argentine and Brazilian political attempts for economic stabilization. After a pronounced drop during the first half of 1892, the spread between their risk premia fluctuated widely. From early 1895, the Brazilian advantage eroded in a fairly steady manner that continued at least until the Refunding Loan of 1898.⁷⁹ In the first week of 1898, Brazilian risk premium was higher than Argentine debt required, and the trend remained fairly consistent through the year (with a short deterioration in advance of the Refunding Loan in July.) Inconsistent economic policy and declining coffee prices contrasted with the strong policy discipline that favored Argentina.

Contagion?

The narrative that emerges from the risk premium and exchange rate data supports the hypotheses that the Argentine debt payment suspension and the Baring Brothers failure strongly affected Brazilian financial history in the 1890s and that the crack of the Encilhamento had strong roots in the international markets that have been previously under-appreciated. The Argentine experience consolidated the vulnerability that Brazil faced in abandoning the gold standard. The

⁷⁸ Ford, *Gold Standard*, Chapters VIII and IX. The opening of the Caja de Conversión (a currency board in today's terms) comprised the major component of the reform.

question remains: Was this contagion? If the crisis only marked a turning point in the exchange rate and risk premium, then its effect may have been limited to establishing the timing of a very long and fundamental financial crisis. How did the events of 1890-91 in Argentina affect investors' perception of Brazilian financial viability?

International financial economists have recently devoted much effort to defining and identifying contagion in contemporary crises.⁸⁰ The core concept of contagion is that shocks in markets for financial instruments in one location cause, or facilitate, shocks in other locations. One of the definitions has been “a ‘shift’ or change in how shocks are propagated between ‘normal’ and ‘crisis’ periods. ... An even broader definition identifies contagion as any channel linking countries and causing markets to co-move.”⁸¹ By this definition, cross-market linkages – the correlation of measures between markets – must increase significantly after a shock in order to qualify as “contagion.” Further, for contagion to be associated with crisis (“crisis-contingent”) the change in market relationships derives from changes attributed to the original shock. Changes in the expectations or liquidity of investors may cause these altered relationships; so might “political contagion.”⁸² Investor expectations in one market could change because of crisis in another, either because the economies are sufficiently similar that the causes of crisis in one

⁷⁹ Much of the deterioration of the risk premia must reflect the global deflation of the 1890s, which may have affected emerging economies more than developed ones.. However, comparing the Brazilian and Argentine trends suggests strong differentiation between developing countries.

⁸⁰ See, for example, Forbes and Rigobon, *Contagion in Latin America*; Sebastian Edwards and Raul Susmel, *Interest Rate Volatility and Contagion in Emerging Markets: Evidence from the 1990s*, NBER Working Paper no. 7813 (Cambridge MA: National Bureau of Economic Research, July 2000). Browsing the NBER list of working papers reveals “contagion” to be one of the more popular paper topics in international finance of the past few years. Despite the volume of research, a consensus definition has not emerged.

⁸¹ Forbes and Rigobon, *Contagion in Latin America*, 2.

⁸² See Forbes and Rigobon, *Contagion in Latin America*, 15-17, for a survey of the literature in this area. Researchers have focused on the investor behavior, rather than direct connections between crisis-affected economies, because the direct linkages between these economies – in trade relations, financial markets, political ties – have not been consistently strong enough to support expectations that these more direct routes would explain contagion. While direct linkages between Argentina and Brazil, at the end of the twentieth century, were strong and might support a contention that crisis in one country would lead to crisis in the other, that hypothesis seems implausible when applied to the 1890s. The trade between the two countries was minimal and financial markets did not have direct linkages. Labor linkages (especially

market are also present in the other or because causal factors (such as trade) link the two economies. As the historical narrative has demonstrated, investor expectations focused on similarities in economic structure and policies are likely to be an important cause of contagion during the Baring crisis. The evidence also suggests that investor liquidity constraints may have also played a role.⁸³

The most common test to identify the existence of contagion relies on finding an increase in the correlation coefficient between financial market variables of two (or more) countries after a shock has occurred. Some researchers have determined that these tests are biased due to problems of heteroscedasticity and endogeneity in the data and of omitted variables. After correcting these biases, they do not find contagion to have been prevalent during the financial crises of the 1990s. They finesse the high occurrence of crises in close proximity by labeling them as cases of “excessive interdependence,” rather than contagion.⁸⁴ Others have pointed out that the heteroscedastic properties of the data do not bias the estimator; and therefore sustain the value of analyzing correlation coefficients in regressions of financial prices across instruments.⁸⁵

For present purposes and with the available data, evidence that the crisis in Brazil was causally related to Argentina’s financial shock, as demonstrated by the timing of shocks and the patterns of co-movement among data series, will have to suffice. A two-step procedure tests the hypothesis that excessive interdependence, if not cross-market shift contagion (by the earlier strict definition), directly linked to the Baring crisis, was a strong factor affecting Brazilian ability to access international financial markets in the early 1890s. The first step determines the timing of

through the movement of immigrants) are interesting, but unlikely to be sufficient to explain their common financial experiences.

⁸³ Data necessary to test rigorously the liquidity hypothesis, which would require identifying investors, are not available.

⁸⁴ Forbes and Rigobon, *Contagion in Latin America*, 19-31.

⁸⁵ Michael D. Bordo and Antu Panini Murshid, *Are Financial Crises Becoming More Contagious? What is the Historical Evidence for Contagion?* NBER Working Paper no. 7900 (Cambridge MA: National Bureau of Economic Research, September 2000), note 10. One means of avoiding the problem of heteroscedasticity, which is used in Table 5, is to consider the change, rather than the level of, price.

changes in the price trajectories and in the relationships between financial prices. Then, an analysis of the direction of change tests the hypothesis of increased co-movement.

A technique developed by Tsay searches for discontinuous shocks in the trend of the prices on Brazilian and Argentine financial instruments, in order to test their simultaneity with specific events. This procedure iteratively identifies disturbances (variance changes) in time series in which the timing and number of exogenous shocks are unknown,⁸⁶ precisely dating shocks to the Brazilian risk premium and exchange rate. Further, applying the procedure to the ratio of prices for Brazilian and Argentine instruments addresses the search for contagion, changes in (shocks to) co-movement. Table 4 summarizes the dates and categorization of shocks to Brazilian and Argentine financial time series between 1889 and 1898.⁸⁷

Shocks to the risk premia of the two countries and to the Brazilian exchange rate coincided very closely with important events in the monetary policies and histories of both

⁸⁶ Ruey S. Tsay, "Outliers, Level Shifts, and Variance Changes in Time Series," *Journal of Forecasting* 7 (1988): 1-20; Nathan S. Balke and Thomas B. Fomby, "Large Shocks, Small Shocks, and Economic Fluctuations: Outliers in Macroeconomic Time Series," *Journal of Applied Econometrics* 9 (1994): 181-200; Nathan S. Balke, "Detecting Level Shifts in Time Series," *Journal of Business and Economic Statistics* 11, no. 1 (January 1993): 81-92. Tsay's procedure identifies significant shifts by iteratively removing such shocks from the time series until its variance is trend-free. Other procedures that have been invoked for similar purposes include Mauro, Sussman, and Yafeh, "Emerging Market Spreads;" Kristen L. Willard, Timothy W. Guinnane, and Harvey Rosen, "Turning Points in the Civil War: Views from the Greenback Market," *American Economic Review* 86, no. 4 (September 1996): 1001-18. The advantages that Tsay's procedure offer over other approaches include that it can identify multiple breaks within a single time series, it can accommodate specifications of the relationship between time series, and it endogenously identifies discontinuous shifts (or shocks). Tsay's procedure also identifies, with some ambiguity (and therefore, I do not use the information here) whether the shock is permanent or transitory in nature. No consensus has emerged on the best methodology for identifying structural discontinuities of time series. I thank Marc Weidenmeir and Kirsten Wandschneider for introducing this procedure to me; Wandschneider generously shared her code and advice for the procedure. I especially thank Xufeng Qian for implementing Tsay's procedure in this application.

⁸⁷ The results presented in Table 4 reflect Tsay's procedure applied to the of the level of risk premia and exchange rates. Tests using the first-differenced values (as are used to generate Table 5) identified the same events producing the strongest shocks (those discussed in the text). Tsay's procedure on first-differenced data identified fewer shock dates clustered around the events. The level data are presented because they produced more robust results than the differenced values. As is common practice, the procedure used here tests the ratio of estimate to variance of the residuals against critical values of 4, 3.5 and 3. The results are reported to the critical value of 3.

countries.⁸⁸ The Brazilian risk premium experienced both permanent and transitory shocks on dates falling within weeks of the coup instituting the Republic (15 November, 1889), abandoning the gold standard (17 January 1890), the Peixoto coup (28 November 1891) and the Refunding Loan for international debt (12 June 1898). Shocks to the exchange rate occurred around the same events – with the exception of the absence of a shock in the shadow of the Republican government and with the notable addition of shocks co-incident with the Baring failure.⁸⁹ These findings conform with Mauro, Sussman and Yafeh (2000) findings that relate financial crisis to domestic events. Multiple shocks around the dates of many of these events may indicate the extreme volatility that they generated.⁹⁰

The pattern of shocks to the ratios between Brazilian and Argentine instruments directly identifies when the extent of co-movement experienced discontinuous change. This analysis very clearly demonstrates the importance of the Baring crisis for Brazil. While the ratios between Brazilian and Argentine instruments generate a fairly substantial number of shocks, their chronology clusters tightly around a small number of events.⁹¹ The shocks to the ratios reflected the domestic events that also appeared in measuring the level of financial prices. In addition, the ratio of risk premia suffered shocks within weeks of decision to Argentina's suspend payments; the ratio of Brazilian exchange rate to Argentine risk premium experienced shocks with both the suspension and the Baring failure. The additional importance of the exchange rate trend with the Baring failure suggests the possibility of short-term liquidity concerns from London investors with the Baring liquidation. The declining trend of the mil-réis was sufficiently established with the Baring failure that the ratio of Brazilian exchange rate to Argentine risk premium suffered no

⁸⁸ Additional dates for shocks, that do not seem to be immediately related to specific events of monetary history, merit further research. Likely explanations include shorter term political crises and fluctuations of coffee prices.

⁸⁹ These results confirm the visual impression of Figure 2 that the stock exchange story of the Encilhamento, giving great weight to the “crack” of 14 February 1891, had no impact on the prices of Brazilian financial instruments traded internationally.

⁹⁰ This result may also reflect noise inevitable in the high frequency data.

further shocks for the remainder of the decade. Again, significant domestic events affecting Brazilian monetary policy did not seem as closely timed as either the Argentine suspension or the Baring failure.

Having determined the specific dates that best account for changes in the prices and relationships of financial instruments, regression analysis can test the hypotheses of the strength and co-movement that address the question of contagion.⁹² Table 5 presents the correlation coefficients from regressions assessing the cross-country co-movement of rates both by the major monetary regimes of the decade and for six-month windows surrounding the major crises identified by Tsay's procedure (in Table 4) – Brazilian abandonment of the gold standard, Argentine suspension and the Baring failure.⁹³ The extent of co-movement (the correlation coefficient attached to change in Argentine risk premium, Table 5A) increased successively with changes in monetary regime throughout the decade, even if it remained low and does not represent a definitive finding of contagion.⁹⁴ Prior to the Argentine suspension, the relationship between the risk premia on Argentine and Brazilian bonds were statistically insignificant. After the suspension, the co-movement grew gradually stronger, in order of magnitude and statistical significance, for the remainder of the decade.

The shorter windows around crisis dates offer a somewhat more complicated story. The relationship between the risk premia attached to the debt of the two economies changed relatively

⁹¹ Again, multiple shocks in very close proximity around these events suggest their volatility and may indicate that the shocks had a cumulative effect.

⁹² All regressions are based on first-differenced data, thus avoiding the heteroscedasticity debate noted earlier. Regressing the rate of change of risk premia also more directly addresses the question of co-movement, rather than level, of the rates. This test, using the exchange rate in place of the Brazilian risk premium, yields similar results.

⁹³ Because the institution of the Republic and the abandonment of the gold standard occurred within a few weeks of each other, only the results for the test using the gold standard as a shock date are reported here. The conclusions of the paper are insensitive to which date is used. For economy of space, Table 5 shows the regression results only for the time periods surrounding the events of concern in this paper. The results of the other periods that Tsay's procedure identified tend to be less predictable and generate more modest changes in correlation coefficients.

⁹⁴ Relatively low correlation coefficients and low explanatory value (R^2 s are not reported here) reflect the complexity of contagion and the inability of a given regression statement to capture its causal factors.

little, in the short-term, as a result of Brazil abandoning its adherence to the gold standard. The six-month period after abandoning gold coincided (within one week) of the six-month period prior to Argentine suspension of debt payment obligations. The co-movement of the risk premia, during this short-term period when both economies pursued deteriorating trajectories, did not increase in strength or significance. During the chaotic three and a half months between the Argentine suspension and Baring failure the relationship was completely disrupted.⁹⁵ While Tsay's procedure indicates that the relationship began to shift⁹⁶ with the Argentine suspension, the magnitude of fluctuation became statistically significant after the Baring failure in the tests of the short time periods. The order of magnitude of risk premium fluctuation for the remainder of the decade suggests the likelihood that the Baring failure introduced a period of unstable change during which shocks became successively larger.⁹⁷

In the six-month period after the Baring failure, the risk premium attached to Brazilian debt became significantly correlated with the Argentine premium; the order of magnitude and statistical significance of the correlation coefficient increased notably. The suspension of debt payments was the international event that might most affect investor expectations for Brazil; the business failure of the Baring Brothers had less application to the interpretation of circumstances in Brazil than the events in Argentine events. As such, the sudden change in the co-movement of the risk premia after the second event lends added support to an interpretation that liquidity constraints rendered investors more risk averse as they faced the Baring bailout.

The short-term disruptions, around the occurrence of monetary regime change, for the remainder of the decade also support an interpretation that investors were applying their experience in Argentina to their judgements about Brazil for the remainder of the decade. The

⁹⁵ Its order of magnitude, statistical significance and the sample size caution against attaching importance to the reversal of the sign on the correlation coefficient.

⁹⁶ This was an innovative outlier, indicating a change in the direction of the relationship. This change can be visualized as the shift in the slope of the line in the risk premium spread (Figure 3.)

⁹⁷ From the shock to the risk premium ratio that occurred simultaneously with the Baring failure, all of the remaining shocks were relatively strong; they registered at the relatively high critical value of 3.5.

patterns of co-movement reflected the comparative policy effects in expected manners. At the end of 1891, in the face of the Brazilian coup that resulted in Peixoto's monetarily orthodox government and the simultaneous difficult reformation of the Argentine banking system in anticipation of the Caja de Conversión, the relationship between the risk premia fell apart, for a short period.⁹⁸ Later, with the 1898 Brazilian debt re-negotiation, the strong statistical co-movement that once again manifested itself disappeared as the terms of the new loan imposed rigorous constraints on Brazil as the Argentine economy again became interesting to investors.⁹⁹ (See Table 5B.)

The strong and statistically significant changes in correlation coefficients support the hypothesis of increasing cross-country co-movement that identifies contagion. Although its precise nature was variable, the change in the relationship between the debt instruments of the two countries was sustained at least through 1898, when Brazilian federal debt was re-scheduled. The fluctuation of the risk premia slowly became more closely correlated through the 1890s, while the variability and direction of change shifted. By the Brazilian debt rescheduling in 1898, one might hypothesize that the direction of causality in explaining the increased risk premia that both countries suffered had reversed from the earlier crisis.

Conclusion

Consolidating the findings, a clear trajectory emerges. The ability of Brazil to access international financial markets was seriously impeded from 1890. Exchange rates, the volume of capital flows and the risk premia on sovereign debt suffered serious negative consequences immediately. The contraction of the domestic equity market and the massive failures in the banking sector became notable in 1891. Real living standards (GDP and GDP per capita) declined from 1891.

⁹⁸ This finding is anticipated by the outlier indicated by Tsay's procedure.

⁹⁹ This interpretation assumes that the direction of causality was from Argentina to Brazil. The timing of events and scale of financial problems (including Brazil's lower risk premium) suggest this direction.

An expectation of crisis contingent contagion among economies with pre-existing fragility, rather than among strong economies, suggests Brazil as an ideal candidate in the early 1890s. Brazilian economic circumstance and policy generated financial instability. Close attention to the price of money and capital in international markets demonstrates that these markets responded immediately and in a sustained manner to specific dates of importance to monetary and fiscal policy. The Baring crisis (the combined effects of the Argentine debt suspension and the failure of the Baring Brothers banking firm) was one of the most important events to impact adversely Brazilian financial instruments traded in London. These findings support the hypothesis of increased co-movement of Argentine and Brazilian risk premia after the Baring failure, in contrast to their absence before the Argentine suspension of debt payment obligations.¹⁰⁰ Discontinuous change in the relationships between financial variables occurred immediately and in the expected direction upon the occurrence of both events.

The proximate events to the Baring Brothers' failure occurred in Argentina, next-door to Brazil, and in circumstances that broadly described those facing the Brazilian economy. Nevertheless, that crisis did not involve Brazilians; neither did it directly affect their productive prospects or policy determinants. Even without identifiable direct connections, the collapse of Argentine financial markets and the crisis that it generated in London resulted in an immediate deterioration in the cost of money and a slower change to the risk component of long-term capital costs for Brazil. After the crisis, London investors judged Brazilian debt to be riskier and their capacity to commit capital to Brazil to be diminished. In part, because of the investment decisions resulting from those judgements, it was a self-fulfilling assessment. Just as this early period of open financial markets eased access to international capital for the emerging economies of the

However, a reasonable hypothesis to test would be that, by the end of the decade, the direction of causality may have reversed.

¹⁰⁰ The findings also support research on the difficulties of small open economies to manage independent monetary policy during twin crises and, more generally, globalization. Bordo and Flandreau, "Core, Periphery, Exchange Rate Regimes, and Globalization;" Jeanne and Wyplosz, *The International Lender of Last Resort*.

period, such as Argentina and Brazil, so did it leave them vulnerable. The Baring crisis eliminated the possibility of containing the risks of abandoning the commitment to the gold standard in 1890. It re-initiated (or consolidated) a currency crisis that ultimately spread into the domestic banking and equity markets. While the Baring crisis did not cause the crack of the Encilhamento, the Argentine experience eliminated the possibility of international markets continuing their support of the fragile policy improvements that Brazilians were introducing.

Investors did not equate Brazil and Argentina. The Brazilian Treasury avoided debt rescheduling until 1898. As a result, Brazilian bonds were judged to be less risky than Argentine instruments for most of the decade. When the trend of Argentine reform signaled improvement, in contrast to Brazilian inability to institute stable policy, the risk premia on their debt instruments began a long adjustment, and reversed their relative positions. Conforming with expectations and recent research, other events that had significant impact on the costs of Brazilian financial instruments were those that domestic Brazilian monetary and fiscal policy. For Brazil, the crises resulting from the Baring crisis were unique.

Having identified the transmission of crisis from one economy to another in 1890/91 raises new questions. Because of the sequence of events and the perceived size of problems in 1890, this paper has assumed that causality flowed from Argentina to Brazil. Testing that assumption would help to clarify the mechanisms of transmitting the crisis. The results here suggest the effect of the crisis on the value of the mil-réis as the transmission vehicle; but that finding needs further exploration. The extent to which the Baring crisis affected other emerging capital markets is also a tantalizing question arising from the findings for Brazil. We do not know if the crisis uniquely affected Brazil, because of geographic proximity and/or general similarity of the economies. Historiography that finds a general contraction of capital flows to Latin America and other emerging markets during the 1890s give reason to test the hypothesis that the Baring crisis was a wake-up call, and contagion, or excessive interdependence, became widespread.

Re-orienting and globalizing our understanding of the Encilhamento and its abrupt reversal is an important revision of Brazilian macroeconomic history. This new perspective deepens and lengthens the connections between domestic and international finance more than they have been previously appreciated. If the Baring crisis of the early 1890s was the first emerging markets crisis, then its transmission to Brazil established a pattern that has also proven intractable, as the Asian crisis of 1998 suggests.

Table 1 **Brazilian Yield, Risk Premium and Exchange Rate, summarized**

A. Rates												
		Yield (%)				Risk Premium (%)				Exchange Rate (pence/mil-réis)		
		Standard		Correlation		Standard		Correlation		Standard		n*
<u>end of period</u>	Dates of period	<u>Average</u>	<u>Deviation</u>	<u>with Arg.</u>		<u>Average</u>	<u>Deviation</u>	<u>with Arg.</u>		<u>Average</u>	<u>Deviation</u>	
Republic	5-Jan-89 16-Nov-89	4.55	0.09	-0.01		1.75	0.10	-0.13		27.55	0.38	46
Off gold standard	16-Nov-89 18-Jan-90	5.25	0.35	0.58		2.41	0.35	0.56		26.84	0.90	10
Arg suspension	18-Jan-90 26-Jul-90	5.38	0.13	-0.27		2.55	0.14	-0.28		22.69	1.50	28
Baring failure	26-Jul-90 8-Nov-90	5.20	0.10	0.44		2.31	0.11	0.37		22.89	0.77	16
Peixoto coup	8-Nov-90 28-Nov-91	6.16	0.69	0.65		3.29	0.69	0.64		17.73	2.95	56
Election	28-Nov-91 17-Nov-94	7.02	0.61	0.38		4.23	0.58	0.32		11.35	1.37	156
Reschedule debt	17-Nov-94 18-Jun-98	6.72	0.95	-0.68		4.21	0.99	-0.73		8.74	1.40	188
Full period	5-Jan-89 31-Dec-98	6.54	1.16	0.32		3.84	1.23	0.29		13.49	6.52	522
B. Change												
		Volume of change		% Change from		% of Total Change **						
		Risk	Exchange	beginning of period		Risk	Exchange	Risk	Exchange	Risk	Exchange	
<u>end of period</u>	Dates of period	<u>Premium</u> (%age points)	<u>Rate</u> (mil-réis)	<u>Premium</u>	<u>Rate</u>	<u>Premium</u>	<u>Rate</u>	<u>Premium</u>	<u>Rate</u>	<u>Premium</u>	<u>Rate</u>	
Republic	5-Jan-89 16-Nov-89	-0.26	0.25	-13.98	0.91	-6.44	-1.27					
Off gold standard	16-Nov-89 18-Jan-90	0.74	-1.38	35.77	-5.11	18.46	6.96					
Arg suspension	18-Jan-90 26-Jul-90	-0.03	-2.75	-1.20	-11.07	-0.73	13.92					
Baring failure	26-Jul-90 8-Nov-90	-0.07	1.06	-2.86	4.42	-1.71	-5.38					
Peixoto coup	8-Nov-90 28-Nov-91	2.16	-12.44	64.97	-70.60	53.92	62.97					
Election	28-Nov-91 17-Nov-94	-1.32	-0.06	-34.53	-0.52	-32.95	0.32					
Reschedule debt	17-Nov-94 18-Jun-98	3.26	-4.31	70.20	-44.24	81.32	21.84					
Full period	5-Jan-89 31-Dec-98	4.01	-19.75	-110.73	127.82							

Source: *The Economist*, 1889-1898
See text and Table 4 for determination of periods.
* Unequal size of period samples results from procedure to determine shock dates, and lessens the interpretive value of short periods.
** Since total Change for the period was deterioration, a negative number represents improvement and a positive number signifies deterioration.

Table 2 The Brazilian Encilhamento and its "Crack"

A. <u>Summary Macroeconomic Data</u>								Alternative macro data			
	GDP		GDP, pc	M ₂ , nominal	Bank		Coffee			Price	
	Nominal	1910 prices	1910 prices	(m-r, million	Deposits	Price Index	Price	GDP Index	GDP, pc	Index	
	(m-r, millions)	(m-r, millions)	(m-r)	year-end)	%M2	1913=100	(US¢/lb.)	1949=100	1913=100	(1990US\$)	
	(a)	(a)	(a)	(b)	(b)	©	(d)	(e)	(f)	(g)	
1888	1604	3150	230	338	47.2	56		9.3			
1889	1778	3239	233	323	63.6	65	16	9.6		16	
1890	2096	3619	255	689	74.2	65	19	9.6	55	772	
1891	2959	3929	271	1140	70.2	82	20	9.4		22	
1892	3475	3490	235	877	51.7	101	14	9.2		31	
1893	3561	3043	200	891	45.8	117	16	9.4		33	
...											
1900	4560	3689	205	849	37.0	138	6	8.1	64	704	

B. <u>Summary Securities Exchange Trading on Rio de Janeiro Bolsa de Valores</u>						
	Banks on Bolsa de Valores					
	Total Trading		% total		% total	
	# Companies	Value (m-r)	# companies	companies	Value (m-r)	value traded
1888	53	1252	13	25		
1889	58	2310	21	36		
1890	114	4587	43	38	2350	51.2
1891	61	6670	25	41	2230	33.4
1892	42	3415	14	35	2740	80.2
1893	43	1747	16	36	1147	65.6

<u>Macroeconomic Data Sources:</u>	
A	Goldsmith (1986) Tables II-1 and III-1
B	IBGE (1990) Tables 10.1 and 10.2
C	Catão (1992) Table 1
D	Fritsch (1987) Table A.6
e	Contador & Haddad (1975) Table C.1
f	Maddison (1995) Table B-10d
g	Maddison (1995) Table D-1d, measured in 1990 Geary Khanis Dollars.
h	Villela & Suzigan (1973) Table VII
RJ Bolsa de Valores data: Levy (1977) Tables 16, 17, 18, & 24	
Note: Because the quality of Brazilian historical macroeconomic data is very problematic, indicators from alternative sources demonstrate that, for the years under examination, the specific levels of the macro data are subject to varying interpretation. However, none of the data challenge the characterization of serious financial crisis and recession in 1891/92.	

	(£, thousands)				Total Debt Payments	
	Total Public Sector Loans	Direct Investment	Debt payments	Net	% of exports	% net commercial balance
1886	6250	1209	602	6857		
1887	2674	2679	680	4673		
1888	8991	12752	602	21141	2.8	30.3
1889	24241 *	5002	18054 *	11189	63.2	396.8
1890	0	972	699	273	2.6	29.6
1891	0	429	390	39	1.4	24.8
1892	0	-1073	393	-1466	1.3	8.6
1893	3810 **	130	404	3536	1.3	7.0
1894	700	53	392	363	1.3	11.7
1895	6000	489	445	6044	1.4	13.2
1896	2000	5839	564	7275	2.0	124.5
1897	4750	890	386	5254	1.5	13.3
1898	na					

Source: Franco (1983: Tables A.1 & A.4)

* Renegotiation of existing debt, with increment

** Railroad loan, with Treasury guarantee

Table 4 Shocks to Brazilian and Argentine Financial Experience, 1889-1898

A. <u>Brazilian Rate Levels</u>	
Risk Premium	Exchange Rate
<u>Shock Date</u> <u>Proximate Event</u>	<u>Shock Date</u> <u>Proximate Event</u>
23-Nov-89 Republic	28-Dec-89 off gold; banking reform
28-Dec-89 off gold; banking reform	18-Jan-90 off gold; banking reform
7-Nov-91 Peixoto coup	14-Jun-90 Argentine debt suspension
14-Nov-91 Peixoto coup	25-Oct-90 Baring failure
21-Nov-91 Peixoto coup	8-Nov-90 Baring failure
12-Dec-91 Peixoto coup; banking reform	29-Nov-90 Baring failure
13-Feb-92	31-Jan-91 New Finance Minister
11-Nov-93	Bolsa transaction tax
10-Mar-94	Arg. debt scheduling negotiations
31-Oct-96 Monetary reform	31-Oct-91 Peixoto coup
8-May-97	14-Nov-91 Peixoto coup
12-Mar-98	28-Nov-91 Peixoto coup
2-Apr-98	5-Dec-91 Peixoto coup
9-Apr-98	8-Oct-92
16-Apr-98	15-Oct-92
23-Apr-98	29-Oct-92
7-May-98 Refunding Loan	17-Jun-93
21-May-98 Refunding Loan	7-Oct-93
	22-Sep-94
B. <u>Ratio: Brazil/Argentina</u>	
Risk Premium	Exchange Rate, Brazil/Risk Premium Argentina
<u>Shock Date</u> <u>Proximate Event</u>	<u>Shock Date</u> <u>Proximate Event</u>
23-Nov-89 Brazilian Republic	26-Jan-89
21-Dec-89 Brazil off gold, banking reform	16-Feb-89
28-Dec-89 Brazil off gold, banking reform	10-Aug-89
1-Feb-90 Brazil off gold, banking reform	17-Aug-89
26-Jul-90 Argentine suspension	31-Aug-89
9-Aug-90 Argentine suspension	14-Sep-89
14-Nov-91 Brazilian (Peixoto) coup	28-Sep-89
3-Apr-97	25-Jan-90 Brazil off gold, banking reform
8-Jan-98	15-Feb-90
12-Mar-98	19-Jul-90 Argentine suspension
2-Apr-98	26-Jul-90 Argentine suspension
9-Apr-98	9-Aug-90 Argentine suspension
16-Apr-98	8-Nov-90 Baring failure
7-May-98 Brazilian refunding loan	15-Nov-90 Baring failure
13-Aug-98	29-Nov-90 Baring failure
3-Sep-98	
10-Sep-98	
Shock dates determined by Tsay's procedure (see text). Proximate event: where identifiable as a major event affecting monetary regime, falling within one month of the shock date.	

Table 5. **Cross-country Co-movement of Risk Premium**
Brazilian risk premium, regressed on Argentine risk premium (first differences)

A. 1889-1898, by monetary regime					
<u>Period</u>	<u>begin</u>	<u>end</u>	Correlation <u>coefficient</u>	<u>(t)</u>	<u>n</u>
to Abandoning Gold	5-Jan-89	18-Jan-90	0.24	(0.79)	54
Abandon Gold to Arg Suspension	18-Jan-90	26-Jul-90	0.13	(0.88)	28
...					
Baring to Coup	8-Nov-90	28-Nov-91	0.23	(2.08)	56
Coup to Election	28-Nov-91	17-Nov-94	0.27	(2.95)	156
Election to End	17-Nov-94	31-Dec-98	0.35	(4.94)	216
B. 1889-1891, 6 month windows surrounding events					
<u>Period</u>	<u>begin</u>	<u>end</u>	Correlation <u>coefficient</u>	<u>(t)</u>	<u>n</u>
Abandon Gold minus 6 mos.	13-Jul-89	18-Jan-90	0.16	(0.34)	28
Arg Suspension minus 6 mos.*	25-Jan-90	26-Jul-90	0.13	(0.91)	27
Suspension to Baring Failure	26-Jul-90	8-Nov-90	-0.05	(-0.45)	16
Baring Failure plus 6 mos.	8-Nov-90	9-May-91	0.24	(2.75)	27
Peixoto Coup minus 6 mos.	23-May-91	28-Nov-91	0.22	(1.13)	28
Peixoto Coup plus 6 mos.	28-Nov-91	28-May-92	-0.02	(-0.06)	27
Refunding Loan minus 6 mos.	18-Dec-97	18-Jun-98	0.71	(2.68)	27
Refunding Loan plus 6 mos.	18-Jun-98	17-Dec-98	0.20	(1.27)	27
* Period also corresponds (within one week) to the period of 6 months beyond abandoning the gold standard.					

Figure 1: Risk Premia, 1889-1898

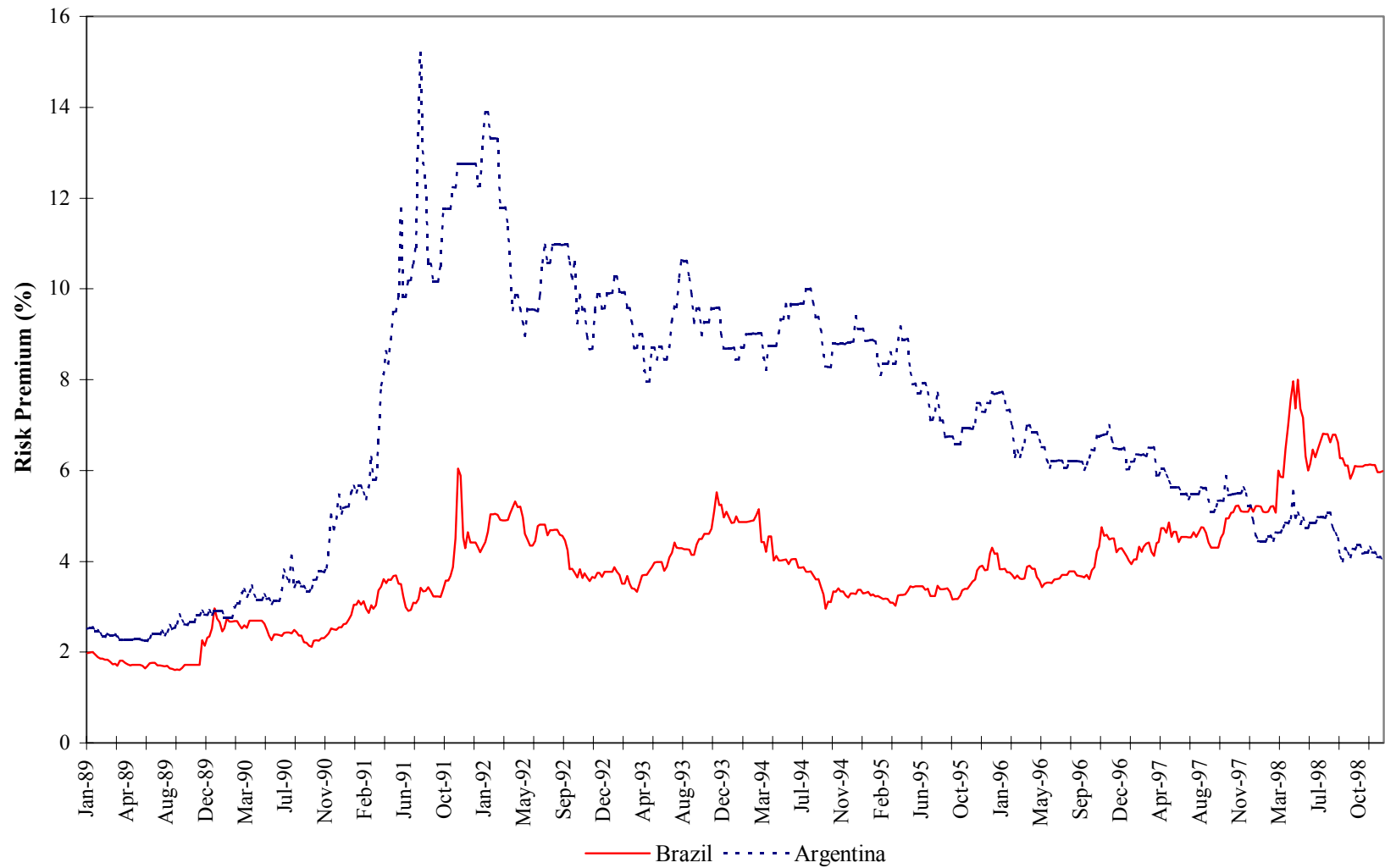


Figure 2: Risk Premium and Exchange Rate, Brazil, 1889-94

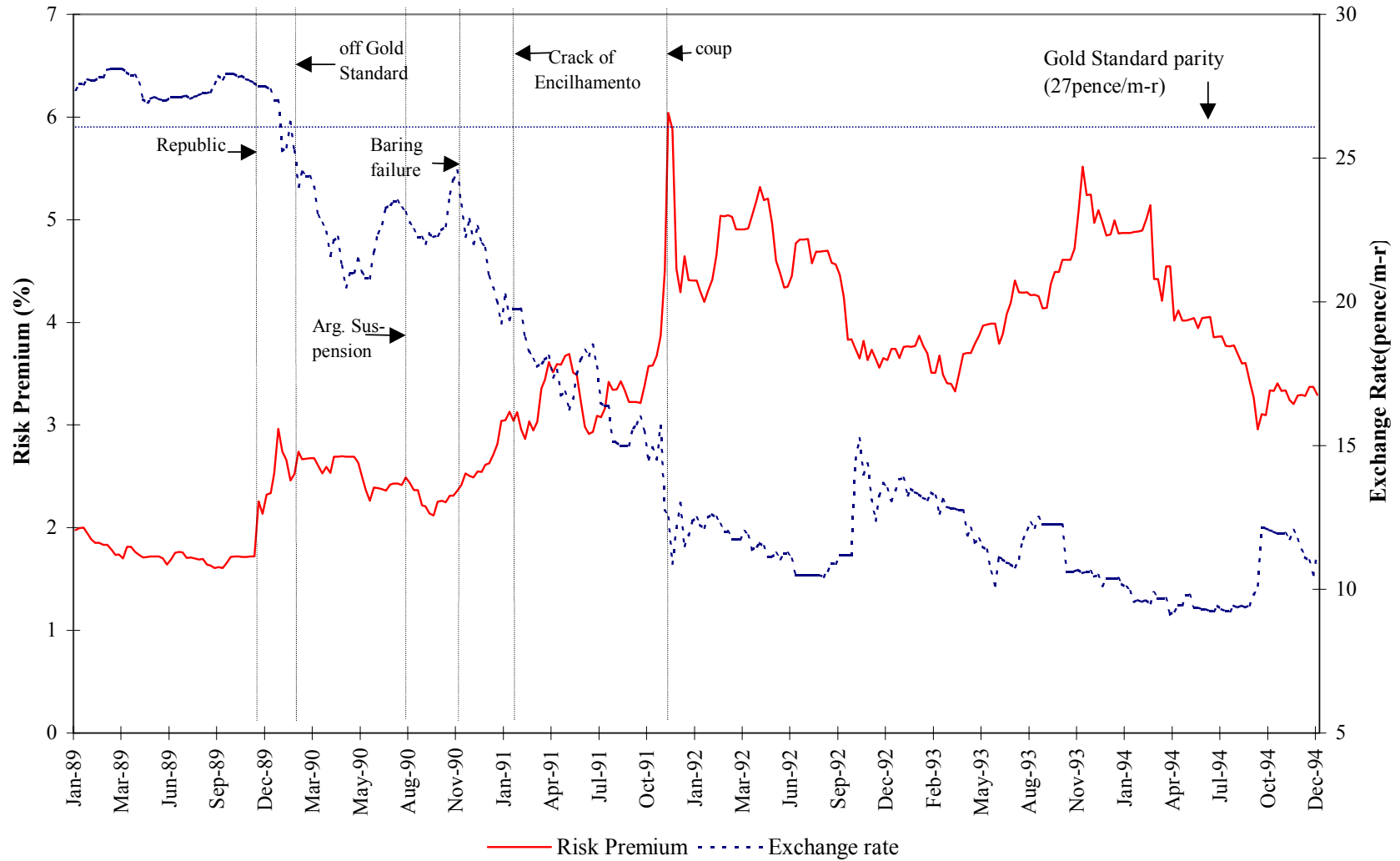


Figure 3: Risk Premium Spread (Argentina-Brazil)

