

When is Debt Odious? Brazil and the Portuguese Loan of 1823

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Abstract: In 1825 Brazil took over Portugal's loan of 1823 in return for recognition of Brazilian independence. This indemnity was costly, increasing Brazil's external debt burden by nearly 40 percent. If Brazil was equally committed to repaying the Portuguese loan and its own debt, the London market should have priced them the same. The market instead evaluated Brazil's two debts quite differently. Despite its odious origins the Portuguese debt was initially priced with less risk of default than Brazil's own loan. Brazil suspended payments on the Portuguese loan in 1828 and resumed payment in 1835. In the aftermath of resumption the market persistently viewed the Portuguese debt as odious. The market misappraised the risk of default in the early period, and failed to give full credit for Brazil's servicing of the debt in the latter period. Overall, Brazil's creditworthiness suffered from taking on the Portuguese debt. Repayment of the Portuguese loan in 1852 is associated with a 70 percent decline in Brazil's own-risk premium in the London market compared to the pre-1852 average.

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Brazil was the best sovereign borrower in nineteenth-century Latin America. Spanish American borrowers all defaulted before 1830. Almost all defaulted several more times over the rest of the century. Brazil's bondholders, by way of contrast, consistently received their interest payments. There was, however, one debt on which Brazil suspended payments: the Portuguese loan of 1823. This paper uses Brazil's assumption of the Portuguese loan to 1) identify circumstances under which a state treats a particular debt as odious, and 2) to assess how markets evaluate the promise to repay such a debt under conditions of uncertainty.

Tests of two hypotheses play a central role in the analysis. The first is that Brazil would repudiate the Portuguese debt, given its odious origins, and do so opportunistically after securing recognition of its independence. It is an axiom of the theoretical literature on sovereign debt that governments will default rather than repay debt when repayment is not in their ongoing interest. In this regard the hypothesis is rejected. Brazil paid the Portuguese debt in its entirety.

The second hypothesis, given that Brazil did not repudiate the debt, is that the market would price the Portuguese loan as embodying the same risk of default that Brazil's own loan carried. This hypothesis is also rejected. Using more than 1,400 weekly observations from the London bond market from 1824 through 1852 reveals there were consistent pricing anomalies between the two loans. The market's pricing of the two loans was subject to large shifts over time. On average the market priced the Portuguese loan as relatively odious.

The Portuguese crown borrowed in 1823 by issuing 1.5 million pounds in bonds in London. Two years later Portugal saddled Brazil with this debt as a condition for recognizing its independence. This "ransom of Brazil's independence" was coercive, a "dis-honorable page of Brazil's history."¹ Brazil serviced the loan until 1828 when it unilaterally suspended transfers that the Portuguese government used to pay bondholders in London. Bondholders in London organized early in the suspension, but their efforts to recruit support from the British government were futile. British officials tried to jawbone Brazil into paying the interest, but did not take any other action. The foreign funds committee of the London stock exchange allowed Brazil to list new debt in 1829 unimpeded, in the midst of the suspension. The committee did not hold Brazil responsible for the Portuguese bondholders not receiving their interest, despite the British government's position that Brazil was to blame. The London exchange did block the listing of a

¹ J.M. Pereira da Silva, História da Fundação do Império Brasileiro (Rio de Janeiro, 1868), vol. 7, pp. 332-333.

new loan to the Portuguese government in exile (the Terceira Regency) until it provided for the payment of arrears in 1831 to bondholders of the 1823 loan. In 1835, with the Terceira Regency in control in Portugal, Brazil resumed interest payments for the loan. Ultimately there were several diplomatic accords between the Brazilian and Portuguese governments about how to settle claims related to the suspension. In 1843 it funded its arrears to Portugal with a new loan in London. In 1852 it raised another loan to pay off the balance of the debt, one year before it matured.

This paper addresses several questions around the loan, the transfer of the debt to Brazil, the Brazilian suspension, and the resumption: how and why Brazil took over the Portuguese loan in 1825, why it stopped servicing it in 1828, why it resumed in 1835, and in particular how the market perceived and assessed the Portugal loan relative to Brazil's own debt.

Most writing on the topic of odious debt is relentlessly normative (the concept itself is employed mainly as a legal "doctrine"). Its main thrust is to argue that there ought to be a law against lending to governments that fail to use loan proceeds for the benefit of their citizens. One implication is that odious debt should be repudiated, not just to relieve the population of the indebted country of an unjust burden, but more importantly to disincentivize future lending to unjust regimes.

There has been considerably less positive analysis of situations in which a debt is seen as odious. Relatively little research has been done on the conditions under which part of a sovereign's debt is more likely to be repudiated. One approach involves debt taken on by a government that is found to be objectionable by a successor regime. The successor regime may seek to repudiate its predecessor's debt, and in doing so repudiate past policies and punish lenders to its political rivals. If bondholders suspect that a later regime could find a debt odious, they will price in a higher risk of default on the debt. One example is the loan taken by Spain (and funded using Cuban resources) to help finance the repression of insurgency in Cuba in the 1890s.² Another approach involves debt of governments engaged in a civil war. Changes in the bond price reflect bets on the probability of victory for one side or the other. The victor finds its own debt to be virtuous and that of the vanquished as odious.³ Civil war is not a requirement,

² Collet, "The Financial Penalty for Unfair Debt: the Case of Cuban Bonds at the Time of Independence," 2013.

³ Mitchener, et al., "Victory or Repudiation: Predicting Winners in Civil Wars Using International Financial Markets," 2015. This is not unique to bond markets. It is well established

however, for a debt to be viewed by the debtor and the market as odious. This paper uses the Brazilian case to assess when a debt first becomes odious and how market perceptions of it evolve.

The circumstances of the Portuguese debt, its suspension, and its repayment tie in with at least three other concerns in the literature, beyond the question of odious debt. The most general is how and why sovereign promises to repay are credible. The economic theory of sovereign debt identifies default as the likely outcome of lending.⁴ Taxing the least elastic component of the tax base can be the most economically efficient solution to repaying debt. Empirical work supports the hypothesis that there is a strong propensity for sovereigns to default. Historically, a surprisingly high proportion of sovereign default does not even involve economic downturns.⁵ In Latin America every borrowing state defaulted on its own debt before the end of the 1820s--except Brazil.⁶ Durable commitments to repay were a puzzle, not the norm.

Another concern in the literature is the relationship between inter-state conflict and sovereign creditworthiness. Most sovereign defaults on foreign creditors were met with restrictions on new lending, not military intervention. When military intervention did occur it boosted expectations of repayment.⁷ But supersanctions were the exception rather than the rule. When they occurred they followed an existing geopolitical logic rather than merely accommodating creditors. Less studied is the situation in which default is used as a tool to further military goals, and the debt used as a hostage. Both elements were present in the Brazilian suspension of the Portuguese debt in 1828.

that in major conflicts, the price of any asset whose value is tied to the outcome of the conflict will reflect the probability of one side winning. Changes in the asset price reflect changes in expectations about the outcome of the conflict; Willard, Guinnane, and Rosen used the gold price of greenbacks to identify events that resulted in durable reassessments of the probability of victory by the North in the Civil War; "Turning Points in the Civil War: Views from the Greenback Market," 1996.

⁴ See for example Kydland and Prescott, "Rules Rather than Discretion;" Fischer, "Dynamic Inconsistency, Cooperation and Benevolent Disassembling Government;" Lucas and Stokey, "Optimal Fiscal and Monetary Policy;" Eaton, Gersovitz, and Stiglitz, "A Pure Theory of Country Risk;" Bulow and Rogoff, "A Constant Recontracting Model of Sovereign Debt."

⁵ Tomz and Wright, "Do Countries Default in 'Bad Times'?"

⁶ Marichal, *A Century of Debt Crises in Latin America*, pp. 43-67; Dawson, *The First Latin American Debt Crisis*, pp. 92-73; Salvucci, *Politics, Markets, and Mexico's "London Debt"*, pp. 100-105.

⁷ Mitchener and Weidenmier, "Supersanctions and Sovereign Debt Repayment."

A third area is the question of debt mutualisation, where one or more sovereigns back a loan to another, guaranteeing repayment. Mutualisation lowers borrowing costs for the lesser-quality state by transferring part of higher quality country's creditworthiness. It has recently been discussed as a way of dealing with debt problems within the EU. Third-party sovereign loan guarantees were not common in the nineteenth century, but they did exist. Esteves and Tunçer assess five cases of nineteenth-century mutualisation on behalf of sovereign debtors on European markets, beginning with the British guarantee of the Greek loan in 1833.⁸ Brazil's takeover of the Portuguese loan in 1825 is even less similar to the current EU situation than were the nineteenth-century cases. It nonetheless shares the core of what mutualisation is about: guarantees from a sovereign who was not the borrower that the loan would be repaid.

The argument and principal findings of the paper can be stated succinctly. Brazil suspended payments on the Portuguese loan in 1828 for political and "dynastic" reasons, not economic ones. Once the constitutionalists won the Portuguese civil war, Brazil resumed payment. There were two periods in which the Portuguese loan was not treated by the market as relatively odious, and actually seen as more likely to be repaid than Brazil's own loan. The first was immediately following Brazil's assumption of the Portuguese loan in 1825. The second, counterintuitively, came in the midst of the Brazilian suspension. For the rest the period the London market viewed the Portuguese loan as a relatively odious debt. It priced a higher risk of default on the loan than it did on Brazil's own loan, even though Brazil faithfully serviced both issues from 1835 onward. In effect, the market badly underestimated the risk of default before 1828, and failed to give full credit for Brazil's reliable payment of interest on the Portuguese loan after 1834.

The remainder of the paper proceeds in five sections. The first uses a basic model of sovereign borrowing to distinguish odious debt from non-odious debt. This provides a simple testable implication to help identify odious debt on the market. Section two presents the background to the loan of 1823. The third section introduces the bond data for the Brazilian and Portuguese loans and the relevant properties of the time series data. Section four analyzes the relationship between the two loans, while the fifth section identifies events that altered the

⁸ Esteves and Tunçer, "Feeling the Blues: Moral Hazard and Debt Dilution in Eurobonds before 1914."

relative position of the two loans in the market. A concluding section summarizes the key findings and characterizations.

1. Sovereign borrowing and odious debt

Consider a sovereign ruler who seeks to borrow, and announces that she will repay. Capitalists choose how much to lend (if they lend at all), and the price (i) at which to do so. Assume that capitalists have alternatives to lending to the ruler that pay a relatively certain return, r . If lending takes place the ruler then decides to repay or renege on the loan agreement. She may repay in some circumstances, and not repay in others. Lenders are not sure which circumstances will arise after they lend. The probability that circumstances will be good and the ruler will repay is p , and the probability the ruler will not repay is $(1-p)$. If the ruler defaults on payment, then it suffers a penalty C for default. For an external debt, it is convenient to think of this penalty as a political cost that is a function of the cost to the economy of reduced access to future credit.

The credit ceiling, interest rate on the loan, and risk premium charged by the lender are determined in equilibrium. For lenders to make at least zero expected profit over their reservation payoff, the probability that government will transfer the contracted amount to lenders must be large enough that:

$$p(1+i) \geq (1+r)$$

With competition in the credit market lenders will charge:

$$i = \frac{(1+r)}{p} - 1$$

The ruler borrows when expected benefits of the loan exceed the cost ($B(L) > L(1+i)$). Ex post, whether the expected benefits are realized does not enter into the debtor's decisions; the ruler repays so long as the debt is no greater than the discounted value of the penalty C :

$$L \leq \frac{C}{1+i}$$

Lenders lend no more than L , charging an interest rate to compensate them for the risk of default $(1-p)$.

An unanticipated adverse shock can reduce the cost of default to the ruler by raising the opportunity cost of debt service. If the probability of favorable circumstances decreases, the rate

at which the ruler discounts the penalty rises. A sustainable debt can then turn unsustainable. Additionally, the penalty C (numerator) might decline for any number of reasons, such as a change in the group in control of the government (which in turn could feed a fall in p). For a securitized and tradable form of the debt, a decline in the market's appraisal of the probability of repayment raises the spread (risk premium) over r , and the interest rate i in the secondary market, reducing the discount factor $(1/(1+i))$ on the penalty.

Once borrowing has occurred all debts are onerous to a ruler. Repayment requires limits on primary spending, or higher taxes (with the accompanying economic distortions). An odious debt is not just onerous. It is a debt that is viewed with special disfavor because of its origins or its unique costs. The likelihood that it will be repaid is less than that of non-odious debt. Odious debt is like junior debt in that the market (once it detects that it is odious) charges a higher risk premium for it than it does the senior fraction of state debt. It differs from junior debt in that the latter is second in line for repayment. An odious debt may be expelled from the payment queue altogether, while the rest of the state's obligations continue to be paid. Odious debt is prone to selective default.

The origins of odious debts are varied. In many scenarios it results from a change in political control of the government. Loans that heavily benefit one particular group might be repudiated by a successor government if the incumbent ruler or group is replaced. In civil conflicts debts owed by one side can be viewed as odious by the other side, which will default on them if victorious.

Consider a partition on a borrower's debt into odious and acceptable components. The political willingness to repay (and the accompanying political cost of default) is lower on the odious debt than for the rest of the debt. If the odious portion is apparent at the time of lending, the higher risk of default is priced in, and would also be reflected in a distinct rationing constraint just for the odious portion of the debt. If a debt is not revealed as relatively odious until after lending has taken place, as a surprise, only then does the market update and price in a higher risk of default.

Two basic implications emerge:

- 1) If all elements of a government's debt are equally onerous, they should have the same risk of default and exhibit the same risk premium, after properly taking into account different features of the loans (coupon rate, maturity, relative seniority, etc.).

2) If the market perceives that the debtor has tagged a part of the debt as odious, it will price the odious component in the secondary market using a higher risk premium than the rest of the country's debt.

I use these testable implications to analyze the markets for the Portugal and Brazil loans.

2. "The ransom of Brazil's independence:" the Portuguese loan of 1823 and the Treaty of 1825

Portugal's finances in the early 1820s were in poor condition. The liberal revolt in Oporto in 1820 sought to establish constitutional monarchy, and demanded that King João VI return from Rio de Janeiro in 1821 to participate. Politically the process was tumultuous, pitting conservative absolutists against liberal constitutionalists. Brazilian political elites were deeply worried that the process would lead Portugal to strip Brazil of its relative political and economic autonomy. In 1822 Brazil proclaimed its independence from Portugal and acclaimed Pedro its constitutional emperor at about the same time Portuguese liberals issued a constitution that left Brazil's autonomy largely intact.⁹ In 1823 João suspended the constitution in Portugal in response to the Villafrancada revolt, promising to replace it with a better one.

Also in the early 1820s, London was in the midst of a lending boom, concentrated on loans to governments. Independence movements in Latin America produced new states that sought to borrow to shore up their military capabilities, further increasing demand for loans to sovereigns. Merchant financiers in London were only too happy to supply the demand.¹⁰

In early October of 1823 João VI signed a contract to borrow through B.A. Goldschmidt and Co. The terms had been set in London a couple of weeks before with the chief of the Portuguese treasury. Discussions had been held with Rothschild as well, who offered a bond issue at the price of 73.¹¹ Goldschmidt offered a much more appealing 87. The Portuguese

⁹ Macaulay, *Dom Pedro*, p. 127; Paquette, *Imperial Portugal in the Age of Atlantic Revolutions*, pp. 178-180.

¹⁰ Neal, "Financial Crisis of 1825;" Dawson, *The First Latin American Debt Crisis*, pp. 14-43.

¹¹ The firm's head was Lion Abraham Goldschmidt, brother of the late founder Baruch A. Goldschmidt. For the terms of the Rothschild proposed contract see Rothschild Archive, London (RAL) 000/401A. Flandreau and Flores classify B.A. Goldschmidt as an "ordinary" intermediary who took on lower-quality borrowers prone to default, while Rothschild took the higher-quality borrowers such as Brazil that were more likely to repay; "Bonds and Brands," pp. 666-7. Goldschmidt would indeed handle loans to Mexico and Colombia, both of which would default.

government was eager to receive it. Contemporaries in London noted the urgency with which the crown took (and implicitly coerced) advances against the loan's proceeds from the Bank of Lisbon: in an "ingenious mode of supplying themselves with funds" the government requested money from the bank; if denied, the bank's "poor directors would, no doubt, be immediately accused of the horrid crime of being Constitutionalists."¹²

Under the loan, which accrued interest from 1 December 1823, Portugal was to pay a twice-a-year coupon at an annual rate of five-percent, amortize no less than 25,000 pounds of the debt each semester, and retire the loan within 30 years. In return for the 1.5 million pound obligation, Portugal would receive a bit more than 1.3 million pounds in cash.¹³

Despite--or rather, because of--Portugal's poor relations with Brazil, Brazil ended up taking over the loan of 1823. Portugal refused to recognize Brazil's independence in 1822, and worked to keep other European states from recognizing it as well. It nearly derailed Brazil's first attempt to borrow in London, as rumors of a Portuguese expedition to re-take Brazil clouded the market. Brazil borrowed, but only after a delay, and at a price probably less than it would have otherwise received.¹⁴ As a matter of policy toward colonies of other European powers, Britain withheld formal recognition until Brazil could come to terms with Portugal. In Brazil the question of diplomatic recognition by Britain was paramount. Brazil and Portugal continued to share the same royal family, whose members held common dynastic concerns. British recognition was a safeguard against Portugal using the Braganças to do what Portugal itself was incapable of doing militarily: reunite the thrones of Portugal and Brazil. For the liberal nationalists who figured prominently in Brazil's independence and constitutionalist movements, the risk of resubjugation under a unified crown remained real. British recognition of independence would put teeth in Brazil's separation from Portugal.

In 1825 negotiations in London between representatives of the Brazilian and Portuguese governments, with British mediation, resulted in a "Treaty of Friendship and Alliance" between

But the default on the Portuguese loan was a decision made by a Rothschild client--Brazil (below).

¹² Morning Chronicle, 29 October 1823, p. 3.

¹³ For the terms see the General Bond in Times, 10 December 1823, p. 2; Times, May 1828, p. 4.

¹⁴ Initial interest from various underwriters waned with the rumors of military conflict, and the first tranche of the loan came out at 75. Only a few months later, with the rumors put to rest, Nathan M. Rothschild brought the remainder to market at 85. Nothing had changed about Brazil in the interim.

the former colony and mother country (sometimes called the Treaty of Rio de Janeiro).¹⁵ In it the king of Portugal recognized Brazil as an independent empire with his son Pedro as its emperor. Brazil in turn pledged to refrain from uniting with any other of Portugal's colonies (the prospect of a Brazil-Angola union was a particular concern of the British, since it would let Brazil internalize its main source of slave labor). Property of the citizens of one nation would be respected in the other (an issue for both sides during the independence struggle). A commission established for that purpose would adjudicate private property claims. Finally, government-to-government claims would be addressed under a separate agreement.

This last article resulted in the Additional Convention of 30 August 1825 (sometimes called the "Secret Convention" since its existence was not divulged for months).¹⁶ In it Brazil's emperor (Pedro) agreed to pay the king of Portugal (his father João VI), an indemnity of two million pounds to settle all claims by the Portuguese crown for royal properties and incomes lost as a result of Brazil's independence. Payment was to take two forms. Brazil assumed responsibility for balance due from the loan that Portugal had taken in London in 1823 (about 1.4 million pounds at that point), and agreed to pay the rest in cash. The negotiators signed the treaty and the additional convention in Rio de Janeiro. For Brazil these were three experienced politicians in the service of Pedro's foreign policies: Luiz José de Carvalho e Mello (visconde da Cachoeira), minister of foreign relations; Francisco Villela Barbosa (future marquês da Paranaguá), minister of the navy; and José Egídio Álvares de Almeida (barão de Santo Amaro), future minister of foreign relations. The negotiator for the Portuguese crown was Charles Stuart, the British diplomat who Canning had charged with arranging several permanent treaties involving Brazil and Portugal.

By this point Brazil's government had borrowed in London, in a loan issued in two parts in 1824 and 1825. Taking over the Portuguese loan increased Brazil's external debt by nearly 40 percent.

¹⁵ Times, 3 November 1825, p. 2; Brasil, "Tratado de Amizade e Aliança entre El-Rei o Senhor D. João VI e D. Pedro I, Imperador, feito por mediação de sua Majestade Britânica, assinado no Rio de Janeiro a 29 de Agosto de 1825..."

¹⁶ Though it had already been published in the Lisbon Gazette, and its terms were known in London, and English translation did not appear in print until late 1826; Times, 30 October 1826, p.2; Times, 10 November 1826, p. 2; Brasil, "Convenção Adicional ao Tratado de Amizade e Aliança de 29 de Agosto de 1825..."

<Table 1. Main Features of the Portuguese Loan of 1823 and the Brazilian Loan of 1824/1825>

For the purpose of the analysis here the Portuguese loan of 1823 and the Brazilian loan of 1824/1825 are comparable.¹⁷ The main features of the Portuguese loan in Table 1 are taken from its General Bond in 1823 (above). The terms of the Brazil loan come from its General Bond of 1824, and from the separate contracts for each part of the loan.¹⁸

The loans shared key similarities. Both loans arose from the need to fund outlays arising from Brazil's independence in 1822 and before. At their respective moments of borrowing both countries had regimes that were nominally constitutional monarchies. Yet both loans were made in the name of their respective monarchs, and neither loan had any parliamentary sanction at the time they were first contracted.¹⁹ Both loans were taken in London, and denominated in pounds sterling.

The loans differed in five ways. The first was their size. The Brazil loan was more than twice the amount of the Portuguese loan. The second was their underwriters. While the

¹⁷ The Brazilian loan was originally envisioned as coming out in three tranches, but the contractors for the first one-third of the loan declined their option of issuing the rest. The bonds of the first part (1824) were being issued when the second part was contracted in whole in 1825. Because the loans had different issue prices they posed different costs of borrowing to Brazil. But the London exchange made no distinction between them, since they were covered by the same General Bond. The two loans were listed and quoted as one in the secondary market. Here I refer to both together as the Brazil loan.

¹⁸ For the general bond see Arquivo Nacional do Rio de Janeiro (ANRJ), Série Diplomacia, Manuscritos, [BR AN Rio] Q1 O DIL 89, "[Bond Certificate] Loan of £3,000,000 Sterling Money for the Service of the Brazilian Empire," 7 June 1824. For the loan of 1824 see Acervo do Museu da Fazenda Federal (AMFF), 71.11.54, "[Agreement for General Bond] between Felisberto Caldeira Brant and Manoel Rodrigues Gameiro Pessoa, Plenipotentiaries, and Messrs. Bazett, Colvin, Crawford & Co., Messrs. Fletcher, Alexander, & Co., and Messrs. Thomas Wilson & Co.," 7 June 1824. For the 1825 loan: RAL 000/336/4, "An Agreement...between Felisberto Caldeira Brant...and Chevalier Manoel Rodrigues Gameiro Pessoa...and Nathan Mayer Rothschild of the City of London...," 12 January 1825; and RAL 000/401/A, "Abstract of the Brazil Loan Contract 1825 Between the Brazilian Gov't FC Brant MRG Pessoa and NM Rothschild, 12 January 1825;" AMFF 77.11.201B, "[Contract] N.M. Rothschild to the General Felisberto Caldeira Brant and Chevalier Manoel Rodrigues Gameiro Pessoa, Plenipotentiaries of His Majesty the Emperor of the Brazils," n.d.

¹⁹ João VI had sworn several oaths to rule constitutionally. However, he had suspended the Portuguese constitution of 1822 in early 1823, and with it the parliament, following the Villafrancada revolt. For Brazil, the constitution was adopted in 1824, but the country's parliament was not yet in place when Emperor Pedro borrowed in 1824 and 1825.

Portuguese loan was handled by Goldschmidt, Brazil's loan came out as two separate issues. The first one million pounds went through a syndicate of merchant firms in London. The rest of the loan came out from Nathan Mayer Rothschild. The third difference was the sources of revenues pledged for debt service. The Portuguese loan was relatively archaic in that it relied on crown monopolies, committing revenues from the tobacco and soap contracts to interest and amortization on the loan. The Brazilian crown pledged customs revenues, assigning quotas for loan service to the customs houses of four major ports.

The fourth way in which the loans differed was in their price. The two parts of the Brazil loan had different initial discounts: the Bazett, Farquhar, Crawford-led syndicate issued at 75 in 1824, while Rothschild followed by issuing at 85 in early 1825. The weighted average price at issue was a bit more than 81. The Portuguese loan had come out through Goldschmidt at a far more favorable 87. This difference in the initial pricing of the two loans mattered only for the ex ante cost of capital to the borrower, and for the returns to initial investors in the bonds. As trading took place and secondary markets repriced risk, the initial offer price of the bond held no consequence for its yield for future bondholders. The difference in initial issue price has no bearing on the analysis below.

The Portugal and Brazil loans were comparable in every other respect that is relevant for considering the market's appraisal of their likelihood of repayment, except for one: maturity. While they had the same tenure, coupon rate, and payment frequency, the Portugal loan was slated to mature four months before the Brazil loan. When Brazil took over the Portugal loan there were 57 coupon payments remaining, and 58 on Brazil's own loan. The difference in the market prices of the bonds that can be attributed to this is quite small at any moment. Discounting, for each loan, the future stream of coupon payments and principal by the average consol yield between 1825 and 1852 provides a counterfactual estimate of their price that is devoid of default risk. Comparing the present values of the two loans for each semester from late 1825 through 1852 shows a difference that never exceeds one pound. The ratio of the two counterfactual bond "price" series is always within one percent of unity. The observed market differences between the bonds far exceeded this. Price gaps were much greater than one would expect predict on the basis of the four-month difference in the loans' respective dates of maturity and the one additional coupon payment on the Brazil loan.

Once Brazil took over the Portuguese loan in 1825 the differing initial sources of funding for their respective loans no longer played any role in the likelihood the loans would be repaid. Brazil was responsible for both, which it serviced with customs revenues. With the passage of the national debt law in 1827, Brazil's parliament recognized both loans as external public debt. The two loans had equal standing.

Brazil serviced the Portuguese loan through the end of 1827. In 1828 political events in Portugal took a sharp turn for the worse, resulting in civil war between liberal constitutionalists and conservative absolutists. The usurpation of the throne by Pedro's brother ran counter to the interests of the Brazilian monarchy. At that point Brazil suspended interest payments to the holders of the bonds of the Portuguese loan, and did not resume payment until the beginning of 1835. It also halted payments to Portugal for the cash balance owed on the 1825 agreement.²⁰

The government's commitment to service the Portuguese loan did not go unquestioned by members of parliament and the Rio de Janeiro political press. The loan garnered unfavorable mention by critics in every parliamentary season from 1826 through 1832. There was always a parliamentary opposition to both London loans. The difference between them was that the Brazil loan had only one strike against it: Pedro had taken the loan without parliamentary sanction, since he borrowed after swearing the oath to the constitution but before the parliamentary elections had been held. The Portuguese loan had the same problem as Brazil's, plus it benefitted the former colonial mother country. While this made it doubly odious in the eyes of critics in the parliament, it did not matter for the government's actions. Not only had a majority of the chamber of deputies voted to recognize both loans as public external debt in 1827, but also in 1831 a two-to-one majority in the chamber supported the repayment of the external debt (including the Portuguese loan) when considering a proposal by the finance minister to default.²¹

²⁰ Brazil was already in arrears on the cash component of the indemnity payment, which by the 1825 agreement it was supposed to have completed within a year. In late 1827 the Brazilian ambassador Itabayana, replying to the Portuguese ambassador to London, blamed the "pecuniary difficulties arising from war with Buenos Ayres" for the delay in completing the payments; Arquivo Histórico do Itamaraty (AHI), 216.1.5; 7 December 1827, ofício 213 (anexo), Itabayana to Palmella. Pedro's war over the Cisplatina was indeed very expensive for the Brazilian treasury; Summerhill, ms. ch. 5.

²¹ Summerhill, *Inglorious Revolution*, pp. 28-9; and, "'God Deliver Us': Copper Money, Sterling Debt, and the Question of Default in the Brazilian Parliament, 1831," ms.

3. Variables and data

There are two main variables of interest. The first is the market price of the bond for each loan. At any moment the price represents the present value of the future stream of coupon payments on the bond, and the discounted value of principal at maturity, adjusted for expectations about the government's performance on the loan:

$$P_t = \sum_i^T \frac{coupon_i}{(1+i_i)^i} + \frac{P_R}{(1+i_i)^T}$$

where P_t is the observed price of the bond in the market, and P_R is the redemption price of the bond at maturity in year T . The yield to maturity, i , is computed as an annual measure, and then adjusted for the semester frequency of coupon payments.

The second variable of interest is the risk premium on each loan. The risk premium is derived from the bond prices and their coupon rates in two steps. First, the yield to maturity on the bond is calculated.²² Yield to maturity avoids biases that arise when current yield is used as a measure of the expected return to a fixed maturity instrument.²³ Then risk-free return is removed from the yield to leave the spread. Risk-free returns are taken as the yield on three-percent consols; the consol yield is computed as that of a perpetual annuity, with an adjustment for the frequency of interest payments. The spread gives the premium that bondholders required to take on the risk of default.

Changes in the spread over time indicate changes in the market's view of the likelihood of default. Consider again the simple model of borrowing above where the debtor either repays in full, or defaults completely. In this case the spread is the product of the risk-free rate of return and the odds ratio on default:

²² In principle the bonds of these loans were callable in increments not greater than the annual amortization rate, but this was only in the case when the market price exceeded the par value (otherwise if they were amortized, it was via the market). As Figure 2 below shows, only once before 1852 did either loan (anomalously) breach that level, and prices outside that one instance were always well below par. The call option can be safely ignored.

²³ Current yields, by way of contrast, assume a bondholder with an infinite time horizon. The bias created by current yield grows as the price of the bond differs (in absolute value) from its par value, and the closer in time it is to the loan's contracted retirement. Yield to maturity suffers from neither of these.

$$S_t = (i_t - r_t) = (1 + r_t) \frac{(1 - p_t)}{p_t}.$$

With limited movement in the risk-free rate of return (as was the case with the British consols in this period), the main source of changes in the spread must be changes in the market's view of the likelihood of repayment.

Bond price quotations come mainly from the Course of the Exchange, occasionally supplemented by the Times of London. Frequency is weekly. The bond price series for the Portuguese loan runs from its entry on the market in late 1823 until paid off by Brazil in 1852.²⁴ For the Brazilian bonds the series run from late 1824, when fully paid bonds were first quoted, until the week when bonds of the Portuguese loan were no longer traded in 1852.²⁵ The sources also provide consol prices (sometimes even when the books on consol trades were technically closed), with a handful of missing observations for the Brazil loan, and a substantially larger number of missing observations for the Portuguese loan.

The main challenge in completing the series was missing observations for the Portuguese loan. The gaps resulted from the lack of price quotes in the market, not from missing sources. Two options were available to complete the series: interpolate the missing values, or use the last reported value until there was a new quote. The latter technique is preferred when two sets of concerns are taken into account.²⁶ The first relates to the information that is conveyed by the absence of a quotation. In situations where risk is already relatively high, the market is thin, and shares of the loan are concentrated in relatively few hands, potential buyers and sellers may not have information they need to form an expectation of the probability of repayment. The last available price is the best information available to inform expectations about the future price.²⁷

²⁴ The first full quotation of the Portuguese loan is in the first week of December of 1823; in early 1824 the quotation switched from the price of the bond to the premium on script. For those cases, adding the issue price to the quoted premia made it possible fill in these months with consistent estimates of the bond's price.

²⁵ The scrip of the Brazilian loan first listed in the third week of August of 1824; the first price quote for the bonds themselves was in the first week of December. The reported premium on scrip in this case does not seem to be a reliable guide to the actual bond's prices, and thus could not be used to faithfully extrapolate the bond's price backward to August.

²⁶ The last reported value is also used to fill in the series of consol prices whenever there are missing observations and for periods when the books of the Exchequer were closed and no curb price quotes were available.

²⁷ Indeed, the mean of the risk premium for Portugal for which gaps are filled using the last reported value is greater than the mean for the original, unfilled series. The last quoted

The second concern stems from the validity of inferences when filling in these missing observations. Using the last reported price is preferred to interpolation when using the data to test for stationarity tests. These results hold when as much as one-third of the series is missing (the number of missing observations of Portuguese bond is less than 20 percent of the series)²⁸.

Descriptive statistics for the original data and the completed risk premia series are presented in Table 2.

<Table 2. Descriptive Statistics for the Risk Premium on the Brazilian Loan and Portuguese Loan, 1825 to 1852>

4. The market for the Portuguese and Brazilian loans

The hypothesis that the bonds of the two loans for which Brazil was responsible exhibited the same risk premium in the market can be rejected in a preliminary way simply by examining Figure 1.

<Figure 1. Risk Premium on the Brazilian Loan and the Portuguese Loan, 1825 to 1852>

A glance at the series suggests the bonds were quite likely related to each other. The cyclical co-movement of the two series is considerable. Numerous changes in the risk premium appear as responses to well established events. The risk of default on both loans was high at various points in time. Default risk for both bonds peaked in early 1848, a market-wide response to the 1848 Revolutions in Europe.

The risk premia on the two bonds not only vary considerably over time, but they also differ. The hypothesis that the risk premia were equal for the period as whole is rejected in Table 3 by several difference-in-means tests.

values used to fill in the gaps are thus higher on average than the observed values of risk comprising the rest of the series. This is consistent with the idea here that market price quotes on the Portuguese loan are more likely to be missing during intervals of relatively elevated risk.

²⁸ Using the last reported observation preserves the ADF test asymptotic distributions, creates less distortion to significance levels in ADF tests, and provides better size-adjusted power for unit-root tests in finite samples. See K.F. Ryan and D.E.A. Giles, "Testing for Unit Roots in Economic Time Series with Missing Observations," Advances in Econometrics, 1998.

<Table 3. Equality of Means Test and Risk Premia for the Brazil and Portugal Loans>

Despite the fact that a single government was responsible for both loans after 1825, the battery of tests reject the null of equality between the means of the risk premia data (t-test, Satterthwaite-Welch t-test, Anova F-test, Welch F-test).²⁹ Even though both loans were obligations of the Imperial government, the market assessed they had different default probabilities.

Figure 1 further suggests that the means of each series were not constant. The two series not only differ, but switch position several times. The first step required to undertake econometric analysis is to whether the series are stationary.

<Table 4. Unit Root Tests for Risk Premia Series>

The approach here to unit root testing considers the results of four tests: the ADF test with constant (with and without trend), and the Elliot-Rothenberg (DF-GLS) test with constant (with and without trend). Under a strict union-of-rejections approach, if any one of the four tests rejects the null hypothesis of a unit root at the 5% level, then the stationarity of the series cannot be rejected.³⁰ However, given that the ADF test can fail to reject a unit root when the series is in fact stationary with a structural break, the union-of-rejections approach is augmented by tests that allow for one endogenously selected structural break (Zivot-Andrews and Perron tests).

For the Brazil risk premium, three of the four tests in Table 4 reject the null of a unit root at the 5% level or better, while one test rejects marginally. For the Portuguese risk premium the test results are more ambiguous. Strict application of the union-of-rejections of approach rejects the null of a unit root (one of the four tests rejects at 5%). However, the differing test outcomes seem partly related to whether a trend is included. Tests on the Portuguese series with an endogenously-selected structural break (Perron and Zivot-Andrews tests, not reported) fail to

²⁹ The rejection applies equally to the series of observed yields, the series of "interpolated" yields, and also when restricting the Brazil risk series to observations for which there were also observations on the Portuguese loan.

³⁰ David Harvey, et al., Testing for unit roots in the presence of uncertainty over both the trend and initial condition," *Journal of Econometrics* 169 (2), 188-195.

reject a unit root at conventional levels of significance. The Portuguese risk premium is questionable for stationarity.³¹

It would be desirable to test both of the series for multiple breakpoints, to see if they shared any durable shifts in common. This is feasible for the Brazil series since it is $I(0)$. But the same cannot be said of the Portuguese series.³²

The advantage of yields to maturity (and risk premia derived from them) is that they make it possible to compare loans of different coupon rates, frequencies of payment, and different maturities. But because of the many similarities in these two loans (detailed above), the bonds can also be compared directly using their prices. Differences between the market prices of otherwise comparable bonds reveal differential assessments of default risk. Figure 2 displays the weekly prices of the Portugal and Brazil bonds from late 1824 (when the latter was first quoted) through late 1852.

<Figure 2. Prices of the Bonds of the Portuguese Loan and the Brazil Loan, 1824-1852>

For the Brazil bond price all of the tests fail to reject the null of a unit root (as do the tests allowing for one structural break (not shown)). For the Portugal bond none of the tests reject the null of a unit root at a level of 5% or better. The breakpoint unit root tests also fail to reject. The two bond price series are non-stationary.

Given that Brazil was responsible for servicing both loans, they should be systematically related. This relationship is suggested by the general co-movement of the risk and price series seen in the preceding figures. It is further confirmed by the results of several tests. The residuals of an OLS regression on the two price series are stationary (Engle-Granger two-step method), thus rejecting the hypothesis that they are not cointegrated.

Figure 3 presents the weekly ratio of the bond prices. This ratio is stationary (see below)-which is further evidence that the bond prices are cointegrated. Additionally, a Johansen test for

³¹ A KPSS test in which the null hypothesis is that the series is stationary does not resolve the question, giving conflicting results depending on whether a trend is included.

³² Because the Brazil risk series exhibits persistence short of a unit root, the Bai-Perron approach to structural breaks will tend to over fit when the model is selected using information criteria, identifying too many breaks. Using the more conservative sequential method of selecting breaks, the Brazil risk series shows no shifts in the mean that endure at least 72 weeks between 1825 and 1852.

cointegration (not reported), allowing for structural break dummies (based on breaks estimated below) as endogenous variables within the system, also rejects the null of no cointegration, finding a single cointegrating vector. Granger (non)-causality tests based on the underpinning VAR show causality running in both directions between the risk premia on the loans. The VEC estimates show that departures from equilibrium are corrected in the short term by adjustments in the risk of both loans, with the risk premium on the Portuguese bond doing more of the adjustment.

<Figure 3. Ratio of the Prices of the Portugal and Brazil Bonds, 1825-1852>

5. Persistent Shifts in Relative Risk

Given the similarity in maturities and coupon rates, and the cointegration of the bond prices, if the government of Brazil was equally committed to repay both loans, one would expect the ratio of their bond prices to be (or hover very close to) unity. This hypothesis--that the market viewed the loans in the same way once Brazil became responsible for both--is plainly rejected by Figure 3 (just as it was rejected by the risk premia series in Figure 1). There were appreciable departures over time from the predicted 1:1 ratio in the prices of the loans: the high of the series is 1.44, and the low was 0.65. The mean of the ratio of the bond prices was 0.96 (median 0.95), not one. More often than not (or to a greater extent), the market systematically priced the Brazil loan more favorably than the Portuguese loan--even though Brazil was responsible for both.

As a precursor to testing for structural breaks, Table 5 presents result of unit root tests for the bond price ratio, two of which reject a unit root at the 1% level, one at the 5% level, and the fourth at the 10% level.

<Table 5. Portugal Bonds and Brazil Bonds, 1825-1852>

Given that the ratio is stationary, it is possible to test for regime shifts using the Bai-Perron approach.³³ Table 6 presents estimates of the structural breaks. The null of a constant

³³ The sequential and repartition methods of estimation reduce the chance that the null hypothesis of a constant mean is rejected when it is true, which can happen if there is strong persistence in the series; Bai and Perron, "Computation and Analysis," p. 15. The method allows up to nine endogenous breaks, which for this series implies that any statistically significant break

mean in the series (no breaks) is resoundingly rejected in favor of one or more breaks by the UD max and WD max tests. Conservatively, the number of breaks is estimated at five by both the sequential and repartition procedures. Figure 3 superimposes the breaks and their corresponding segments on the graph of the weekly data.

The result is six stages in the evolution of the market's appraisal of the Portuguese loan under Brazilian responsibility, from more favored status, to its treatment as an odious debt. The only possible explanation for these shifts is fundamental reevaluations by the market of the relative risks of the two loans under Brazil's responsibility. Whether these reappraisals were reasonable in light of events must be assessed on an episode-by-episode basis. Some of the shifts were readily intelligible. Others suggest periods of pricing anomalies. While markets famously aggregate all of the information that is available at any point in time, they also lack omniscience. In particular, the Portuguese loan was underpriced for a long stretch following the Brazilian resumption, even after a decade after consistent repayment.

<Table 6. Breaks in the mean ratio of the Portuguese bond price to the Brazilian bond price, 1825-1852>

<Figure 4. Structural Breaks in the Bond Price Ratio Series>

Preferred debt: 1825-1828

The hypothesis that the market viewed the Portuguese loan as an odious debt for Brazil is clearly rejected for the earliest period. The London market favored the Portuguese issue over the Brazilian loan. The Portuguese loan continued to be favored even after the Additional Convention of 1825 had been made public. In the 32 months between the Convention and the Brazilian suspension of payments on the Portuguese loan, to buy a Brazil bond yielding 5 pounds a year in interest cost a London investor only 62.2 pounds on average. To get the same 5 pounds in interest on a Portuguese bond cost an investor more than 74.5 pounds. Investors paid a

in the mean persist for at least 74 weeks. Breaks that are visible in the graph (and that may correspond clearly to events), but are shorter than this span, are treated as "blips" in that their effect does not persist. The sequential procedure picks the supremum of the F-tests for all possible breaks, then divides the series at that point to pick the supremum of the F-tests for all breaks in the subseries, and so forth. Standard errors are robust to heteroskedasticity and autocorrelation in the data.

premium in excess of 12 pounds to receive identical interest payments. Though both loans were under the responsibility of the Brazilian government, the market viewed the risk of default on the Brazil loan as appreciably higher than that of the Portuguese bond

On the surface this made no sense. The difference in risk premia (500 basis points on the Brazil loan vs. 350 points on the Portugal bond) presents an important puzzle: the loans were structured identically, with nearly the same tenure, both were the responsibility of the same government, both were funded after 1825 using the same pool of fiscal revenues, both were taken without the parliamentary sanction required by Brazil's constitution, and both received parliamentary sanction together in 1827 (an event that did not budge the premium on the Portugal bond over the Brazil bond). The surprising and counterintuitive "seniority" assigned by the London market to the Portuguese loan after it was transferred to Brazil can be attributed to an important detail of the 1825 convention: it bore the signature of the British diplomat Stuart. Brazil's promise to repay the Portuguese loan carried a British government stamp of approval, which suggested an implicit provision for third-party enforcement of the loan. The market took it as form of "mutualisation," and behaved as if the British government was bailed-in on the Portuguese loan in way that it was not for Brazil's own loan.

Odious debt: 1828-1831

The London bondholders could not have been more wrong in thinking that the Portuguese loan had less risk of default under Brazilian responsibility than did Brazil's own loan. In response to Miguel's takeover in Lisbon, the Brazilian ambassador suspended service on the Portuguese loan in May of 1828.³⁴ Brazil continued to pay interest on its own loan. The resulting break in the bond price ratio series is noteworthy for two reasons: its size, and the fact that it completely inverted the market's previous ranking of the two loans. Before the break the Portuguese loan was at 17 percent premium over the Brazil loan on average. With the break, the Portuguese bond price averaged almost 20 percent less than the price of the Brazil bond.

The abrupt negative shift in market sentiment on the Portuguese loan in response to the suspension in 1828 is unsurprising. The story behind this default is rather different than that

³⁴ "Ofício," Visconde de Itabayana to Marquês de Aracaty, 9 May 1828, AHI, 216.1.05, Doc. 266.

recently portrayed.³⁵ Flandreau and Flores argued that default was effectively a result of Portugal choosing a precarious underwriter that offered more funds up front, but no support later. The alternative would have been to use an underwriter like Rothschild who would provide long-term support (but at the cost of a lower issue price). In this view, if Portugal had gone with Rothschild instead of Goldschmidt in 1823 it would have signaled that it was a "good" borrower, and would have enjoyed Rothschild's continued support in the bond market at the IPO price of 73. This somehow would reduce the chance of default on the Portuguese loan.

There are two problems with this view of the Portuguese loan and its suspension. The first is that the decision to suspend was not even Portuguese--it was Brazilian. It was the Brazilian ambassador in London who unilaterally withheld the interest that had been remitted from Brazil for the holders of the Portuguese bonds.

The second is that the "brand" of the underwriter had nothing to do with the suspension. The original underwriter (Goldschmidt) no longer even existed as a concern. Even if a high-quality underwriter like Rothschild had been chosen by Portugal in 1823, instead of a more "ordinary" firm like Goldschmidt, there was no guarantee it would have supported the Portuguese bonds in the market at any price, much less the (counterfactual) IPO price of 73--a factor that in any case had no bearing on the actual decision to suspend in 1828. In fact, Rothschild did not even play this kind of supporting role for Brazil. At best he supported the Brazil price for about 14 weeks after its own issue.³⁶ He did not provide medium or long-term support (of the type that Portugal ostensibly would have obtained through Rothschild in early 1826) to keep the Brazilian bond anywhere near its initial issue price of 85, nor at 75, 65, or even 55. A little more than year after Brazil issued its bond the Rothschild support was long gone--in early 1826 Brazil's bond sank as low as 52. It would not hit 85 again until a full decade later (by

³⁵ Flandreau and Flores rely on the contrast between the differing choice of underwriters by Portugal and Brazil to support one of their findings. They do not seem aware that responsibility for the Portuguese loan had actually transferred from the Goldschmidt client (Portugal) to the Rothschild client (Brazil), nor that it was the Rothschild client that decided to default; "Bonds and Brands," pp. 674-675. Their general finding that there were systematic differences between stronger and weaker borrowers, and the underwriters that partnered with them, is well taken (see Table 4, p. 668).

³⁶ Flandreau and Flores calculate the three-month increase on Brazil's IPO price under Rothschild at 3.7%--a measure of placement success. I calculate it as effectively zero--comparable to Portugal's three-month return as a Goldschmidt client.

which time Rothschild had been long removed by Brazil as its financial agent in London).³⁷ How Rothschild might have supported the Portuguese loan at 73 and somehow prevented the default is completely unclear. Ironically, it was the Rothschild client in 1828--Brazil--that left the bondholders of the Portuguese loan without payments.

The real story behind the suspension was not about financial underwriters, nor even the view of some contemporaries that the debt was odious to Brazil from the outset. The story was geopolitical and dynastic. In 1824 King João VI's son Miguel, an absolutist, went into exile in Vienna after the failed Abrilada conspiracy in Lisbon against his father. In 1826 João VI died. By the established line of succession the new Portuguese regency acclaimed Pedro I, the emperor of Brazil, as King Pedro IV of Portugal. The Brazilian constitution, however, effectively barred Pedro from serving as monarch of both nations.³⁸ Pedro's intent was to quickly abdicate the Portuguese throne in favor of his daughter. But he wanted to insure that Portugal would have a stable and constitutional government. To overcome opposition in politically divided Portugal the more liberal Pedro made a pact with his exiled brother Miguel in Austria. The deal they struck placed Pedro's daughter Maria on the throne, and brought her uncle Miguel back from Vienna to be regent and consort.

Miguel had consulted repeatedly with Metternich during his years in Vienna. As a member of the Holy Alliance, Austria's government was in favor of a less liberal regime in Portugal than that which had been followed in the wake of the Oporto rebellion in 1820. Which was precisely what Miguel set about to implement when he returned to Portugal from Vienna. He first travelled to London, where he lingered while trying to arrange a loan for the Portuguese government for 200 thousand pounds. Bankers would not lend to him without a guarantee from the British government. The treasury advised Wellington that since Miguel was not yet regent, he could not pledge revenues for repayment, and thus offered nothing more than "personal bond to

³⁷ Rothschild support for Brazil came in 1829 when it partnered with the 1824 syndicate to raise 400 thousand pounds--at 52, the previous market low for Brazil from 1826!

³⁸ Article 104 of the 1824 constitution required permission of the parliament for the emperor to leave Brazil; doing so without permission was explicitly defined as abdication. Realistically, it was politically unviable for Pedro to rule Portugal from Brazil, and the Brazilian parliament was never going to grant license to Pedro to rule Brazil from Portugal. Reunification of the throne was one of the greatest anxieties of the Brazilian liberals.

the lender..."³⁹ After having failed to arrange a loan in London with Rothschild, Miguel went to Lisbon. Before Maria could arrive from Rio de Janeiro, Miguel was acclaimed king in Lisbon by a cowed cortes, purged the officer corps, and signaled that he would take the throne for himself alone, restoring absolutist government in Portugal.

Miguel's usurpation undermined Pedro's dynastic interests. It posed immediate consequences for Brazil's service on the Portuguese loan. In March the Portuguese ambassador in London, marques of Palmella, already suspected that Miguel's actions in Lisbon could result in a halt to Brazilian payments.⁴⁰ In April the press reported assurances on "good authority" that Brazil's minister in London, visconde de Itabayana "would afford a proof of the good faith of his Government, and their religious observance of the convention of 29th August, 1825, [and] will cause the Dividend of that Loan to be paid as usual."⁴¹ Claims of a looming suspension continued to ripple through the market, attentive to events in Lisbon.

By early May Itabayana declared that Brazil would not make the next payment after all. He made the decision unilaterally. Then he informed the government in Rio of his decision "that the disorders in Portugal forced me to adopt," and requested further guidance.⁴² The payment agents for the loan confirmed the suspension, noting, "owing to unforeseen circumstances they have not the means to effect the dividend," and expressed their hope that the "suspension will only be temporary."⁴³ The estimated break in the bond price ratio falls in the week of 28 April--precisely when the Brazilian ambassador shifted from reassuring the bondholders to declaring that the next payment would not be made. There was no problem with money. Itabayana had it on hand for the interest payment. Under public and private pressure Itabayana held his ground against Wellington (prime minister), Rothschild, and Esterhazy (the Austrian consul) all in one day. For Aberdeen (the foreign minister) "the license which these Brazilians give themselves is astonishing. The dividends on the Portuguese loan have been stopped, as before the expedition to

³⁹ Palmella, *Despachos*, Palmella to Cândido José Xavier, 9 January 1828, pp. 392-394; Wellington, *Despatches*, J.C. Herries to Wellington, Vol. 4, 15 January 1828, p. 195.

⁴⁰ *Despachos*, Palmella to Conde de Villa-Real, 19 March 1828, pp. 449-453.

⁴¹ *The Courier*, 30 April 1828, p. 4.

⁴² AHI, 216.1.5, 9 May 1828, ofício 266, Itabayana to Marques de Aracaty.

⁴³ *The Times*, 2 June 1828, p. 6.

Oporto; and the English creditor is robbed, under pretence that the state of Portugal justifies the proceeding. Portugal has nothing to do with the debt, which is that of Brazil alone..."⁴⁴

Palmella, having been once incarcerated by Miguel several years before, soon declared himself a constitutionalist and opponent of Miguel's rule. He and Itabayana plotted to divert the funds for the interest payment to Maria's cause and the Portuguese liberals. The audacity of the Portuguese liberals, and their Brazilian support network, in using Britain as a base for their efforts to organize the military effort galled the British. Wellington told Aberdeen that "I happen to know that the money of which the British creditors were defrauded on the 1st of June was employed at a later period to carry on the war with Portugal...This was done while the Marquis de Palmella and Vicomte d'Itabayana were each of them claiming the privileges of Portuguese ambassador at this Court!"⁴⁵

The London market had grown accustomed to default by this point in the decade. Recriminations over the suspension were split between Brazil and Portugal. Bondholders condemned the abrogation of Brazil's responsibilities under the additional convention of 1825. They also held that Portugal was still responsible for the loan. The original loan contract from 1823 had no option for the unilateral transfer of the debt to Brazil (or anyone else). In 1825 Goldschmidt had opposed the transfer of responsibility, and the bondholders had not been consulted.⁴⁶ The Brazilian suspension was thus not viewed as an "excusable default" of the type that might result from an exogenous fiscal shock or foreign invasion. It was purposively undertaken to fund a venture to oppose Miguel militarily and to support Maria's right to the throne in Portugal. It was precisely the kind of eventuality prohibited by the original loan contract, which made the debt "inviolable and not to be affected by any political change or circumstance whatever..."⁴⁷ Rothschild's correspondents in Rio de Janeiro reported that "nothing less than Portugal Governed under the name of D[o]m Pedro I will induce this Government to remit for the Dividends on Portugal Loan..."⁴⁸

⁴⁴ Aberdeen to Wellington, 16 October 1828, Wellington, *Despatches*, Vol. 5, p. 143.

⁴⁵ Wellington to Aberdeen, 23 August 1828, *Despatches*, pp. 655-6.

⁴⁶ *The Times*, 27 May 1828, p. 3; *The Times*, 28 November 1828, p. 3.

⁴⁷ Article 13, included in the critical cartoon below.

⁴⁸ RAL, XI/38/215 B13, Samuel, Phillips & Co. to Nathan M. Rothschild, 18 July and 12 July 1828.

Figure 5 ("The Hue and Cry") portrays the ongoing default in its key financial, political, and diplomatic aspects, more than a year after it began. At the center the child Queen Maria, with scepter in hand, holds a distressed-looking John Bull, representing the British bondholders, on the ground. A caricatured Portuguese figure takes from Bull's pocket a "Portuguese Bond," while Wellington and Peel (or possibly Aberdeen), in the guise of police officers, warn the queen about pickpockets around her. Peel holds in one hand the "Memorial of British Bondholders," a grievance presented by bondholders to Aberdeen in 1828 about the suspension.⁴⁹ On the left, Miguel as the King of Hearts stands with Beresford, a supporter who was both a British general and marechal of the Portuguese army, and who had fought with Wellington in the peninsular campaign. To the right is Dom Pedro as the King of Diamonds (since diamonds were a crown monopoly in Brazil). Nathan M. Rothschild advises Pedro: "If you pay them they will want more monies," while the Devil counsels Rothschild to "Tell him to call it Political Expediency--you know well how easily John Bull is humbug'd." Under Maria's shoe is a paper bearing the expression "Honesty is the Best Policy." Bull states "I always thought before that when rogues fell out honest men got their due--but Lord how the Times can change!!!" (a fairly direct shot at the Times of London), with the rogues in this case being Miguel and Pedro.

In the left margin an extract from the General Bond for the loan affirms that the promise to repay was "inviolable and not to be affected by any political change or circumstance whatever." In the right upper margin a passage from the Additional Convention of the 1825 treaty reminds the reader that "In the name of the most Holy Trinity His Imp[eria]l Majesty takes on the Treasury of Brasil the loan which Portugal contracted in London in Octr. 1823. Witness Chas. Stuart." Clearly the signature of Stuart on the convention, as a British official, was seen as important in the market. Below that, a stick figure hanging by a noose suggests the financial fate of the bondholders, due to the "suspension" of payments. To the left another investor is punitively locked by the legs in stocks for "dabbling in foreign Stocks and securities." The illustrator used the rest of the space in the same manner--skewering the ensemble self-interested parties around John Bull. The cartoon was "Dedicated to holders of Foreign Bonds in general."

⁴⁹ The text below the policeman on the left says "Peel," who as home secretary created the London's modern police. But the "A" on his hat, and the fact the memorial was presented by the bondholders to Aberdeen, suggests the character might be Aberdeen, not Peel. The military drummer on the right could be Aberdeen, who was foreign secretary, but the "P" on his hat would suggest Peel. On the memorial prepared by the bondholders see Times, 2 October 1829, p. 3.

<Figure 5. "The Hue and Cry"

In short order the Portuguese loan went from being preferred by the market over the Brazil loan, to being seen as an odious debt for Brazil. Bondholders now grasped that the British role in negotiating the transfer of the debt to Brazil made little to no difference to whether Brazil would repay it. Nothing about the loan per se had changed. The identity of the party ruling Portugal, however, changed dramatically, and with it the Brazilian government's assessment of the political costs of repayment. The calculus was not financial but strategic. Brazil did not want its payments to the bondholders to redound to the credit of Miguel's government, nor to suggest any sort of Brazilian acceptance of his usurpation in Portugal. Brazil had a better use for the interest previously paid to the bondholders: it would help fund the Portuguese liberals of the Terceira Regency, and ultimately the campaign to defeat Miguel. Default on the Portuguese loan in 1828 had nothing to do with the standing of underwriters in London.

Somewhat preferred again: 1831-1836

Maria's government in exile, the Terceira Regency, would receive for the next several years from the Brazilian ambassador in London the money remitted from Brazil to service the Portuguese bonds. The bondholders received nothing from Brazil. Curiously, the lack of Brazilian payments to the bondholders did not preclude another major readjustment of relative risk between the two loans. In 1831 the Portuguese bonds became worth more than the Brazil bonds, on average. Looking at the data, it is as if they were being serviced, or the Brazil bonds had gone into default. The structural break is estimated in the week of 15 July 1831 (with a confidence interval running from 17 December 1830 to 30 September 1831). Although the value of the 1823 loan would fluctuate sharply in this period, above and below the price of the Brazil loan, the mean price ratio for the segment delimited by the break was 1.025 (the counterfactual present value calculations, devoid of default risk, would give the Portuguese bond an edge over the Brazilian bond of less than three tenths of one percent at the time, so the observed difference was a true shift in relative risk). On average, between 1831 and 1836 the bonds from the Portuguese loan commanded a premium, and were seen as less risky than the Brazil bond. Given

that the Portuguese bonds were in their fourth year of default in 1831, while interest on the Brazil loan was regularly paid, this is s another persistent pricing anomaly.

Three events within the confidence interval of the 1831 break did improve the outlook for the Portuguese bonds. The first was the April abdication of Pedro I in Brazil. One implication of his departure from Rio de Janeiro was that he would personally direct the forces of the Terceira Regency against Miguel, giving the Portuguese liberals leadership and a unifying figure that had been absent up to that point. As a constitutionalist Pedro might be expected to create a government that would honor debt. As a veteran chief of state who had overseen the military effort to secure Brazil's independence, the defeat of a separatist movement in Brazil's northeast, and a three-year naval and ground campaign in the Rio de la Plata, Pedro's exit from Brazil boosted the likelihood of a constitutionalist victory in Portugal.

The second event bearing on an improved outlook for the Portuguese bondholders was the position taken by the lower house of Brazil's parliament. In June the finance minister proposed a five-year suspension of interest payments on Brazil's entire London debt. Within a week a majority of the chamber of deputies defeated the proposal. The vote signaled that in principle Brazil's parliament supported paying all of the London debt--including the Portuguese loan. The 1828 suspension of interest did not imply repudiation by Brazil's parliament.

The third event was the new loan arranged in Paris and London for the Terceira Regency. The Regency tried to borrow in London earlier in 1831 through a wildcat underwriter (Maberly). The proposed loan promised to settle the interest in arrears since 1828 with the existing bondholders--but only after "divine providence should permit [Maria] to...enter into possession of her usurped Dominions," in the words of the Brazilian ambassador. To make matters worse for the bondholders, the Brazilian ambassador (marquês de Santo Amaro) seems to have pledged the remittances from Brazil for interest on the 1823 loan, and which had been diverted to the Terceira Regency since 1828, to the service of this new loan. The 1823 bondholders petitioned the exchange to prevent the new loan from being listed.⁵⁰ In a 14-to-six vote by the foreign funds committee, the opponents obstructed the new loan. The ban made it much harder to raise capital affordably by way of public subscription. Maberly did not independently command the resources

⁵⁰ Records of the London Stock Exchange (RLSE), MS14600/012, 15 January and 17 January 1831, ms. pp. 179-186.

to fund it. It was blocked, with less than one tenth of the loan subscribed.⁵¹ For the moment, it seemed that the Brazilian suspension had come back to haunt the prospects of the Terceira Regency gaining funding.

Any solution to the impasse with the London exchange would require coming to terms with the holders of the 1823 bonds. The Terceira Regency had this in mind when it made a second run at a loan in 1831. Part of it was earmarked to settle the balance on the failed Maberly loan, and part of it would pay the interest in arrears to the holders of the 1823 Portuguese bonds. Using new money to pay interest on previous sovereign debt had no precedent in the London market until Brazil borrowed to do just that in 1829. The 1829 Brazil loan to cover interest went down in history as the "ruinous loan" because of its low issue price. The new loan for the Regency would be similar in this regard, but worse. The Regency contracted it on 23 September in Paris through A. Ardoin, with Jacob and Samson Ricardo (brothers of David Ricardo) as agents in London.⁵² This time, because the loan benefitted the legacy bondholders (and thanks no doubt to the influence and standing of the Ricardos, who held a seat on the foreign funds committee), the exchange accepted it for listing. The loan found a market in London but was dismally priced. The Regency raised on average 44 pounds cash for each 100-pound bond. It nonetheless provided 227,500 pounds earmarked for the 1823 loan's back interest.⁵³

In short, in 1831 the future brightened somewhat for the holders of the 1823 bonds. Brazil was still withholding interest and amortization on the loan.⁵⁴ But Brazil's chamber of deputies rejected default on the London loans in general, affirming the principle of repayment of all of the external debt. Pedro took command of the Regency's campaign to invade Portugal. The

⁵¹ Times, 17 January 1831, p. 5; Times, 19 January 1831, p. 2. On the Brazilian ambassador having committed the money, see Brazil, Annaes do Parlamento, 6 July 1831, p. 211; and 5 August 1831, pp. 29-30.

⁵² The date of the Paris contract falls just one week outside the 90 percent confidence interval on the break date, but within the 95 percent confidence interval. In November Ricardo brought the loan to the committee of the foreign market of the London exchange for consideration for listing. The committee voted 14 to 1 to approve it; RLSE, MS14600/013, 5 December 1827, ms. pp. 25-27.

⁵³ Pinto, Dívida Pública Portuguesa, p. 49. On the failed Maberly loan to the Regency, and the provision from the successful Ricardo loan for the interest arrears, see The Times, 21 October 1833, p. 3.

⁵⁴ In 1832 the finance minister reported to the chamber of deputies that Brazil had not made any payments to the bondholders from 1828 onward; Annaes do Parlamento, Camara dos Deputados, 30 July 1832, p. 125.

new loan in London for the Regency made the existing bondholders nearly whole on their overdue interest up through 1831. No wonder the value of the Portuguese bonds jumped relative to Brazil.

Updates from the military campaign in Portugal may explain considerable volatility within the interval established by the break. The sharp spike in mid 1833 can be associated with three major constitutionalist victories in quick succession. The constitutionalist squadron (commanded by a British Whig politician, Napier, who was literally outgunned in cannons two to one) defeated miguelist naval forces in June. Ground forces, under Pedro's command, were divided into two main efforts. The liberal defenders of Oporto drove miguelista forces from the field in late July. A simultaneous advance against Lisbon sparked a constitutionalist uprising that took the city. The war ended with Pedro's final victory in May of 1834.

With the defeat of Miguel the 1823 Portuguese Loan was no longer odious in the eyes of the Brazilian government. Indeed, paying again would redound partly to the credit of Queen Maria II. Pedro's unexpected death from tuberculosis in late September of 1834 registered no impact on the Portuguese bonds in London. Their prices were bolstered by the Brazilian government's resolution to resume service on the Portuguese bonds from 1823, beginning in 1835.⁵⁵

"Madness and ruin:" 1836 to 1843

The preferred (if volatile) status of the Portugal bond over the Brazil loan did not last. Both governments suffered growing fiscal stress in the 1830s. Brazil made sure the bondholders of its own loan received their interest, but after 1830 it stopped sending funds to London for the annual amortization. In early 1835 the finance minister in Rio acknowledged that Brazil's arrears on the Portuguese loan going back to 1828 were about 825,000 pounds in interest and amortization.

This sum was due from Brazil to the government of Portugal. It was not net of the money allocated by the Brazilian parliament for the interest that had been diverted to the Terceira Regency starting in 1828. From the perspective of bondholders in London, part of the arrears had been covered by the Ricardo loan for the Terceira Regency in 1831. This amount was added on

⁵⁵ The budget law explicitly provided funds for the debt and amortization for the fiscal year; Lei 38, 3 October 1834, article 22.

to Brazil's tab. Combined with broker fees to financial agents, and foreign exchange costs arising from the weak Brazilian currency, brought Brazil's outstanding bill in 1835 on the its 1828 suspension of service on the Portuguese loan of 1823 to well more than one million pounds. Much of Brazil's support of the Terceira Regency had been in effect a gift.

Paying this all at once was out of the question for Brazil.⁵⁶ In 1835 a major secessionist revolt erupted in Rio Grande do Sul. This raised the prospect of another territorial loss on top of the loss of the Cisplatine province nearly a decade earlier. At the other end of the country a violent social revolt broke out in the province of Pará the same year. Suppressing these revolts was expensive, requiring a multi-year effort by the central government. The risk premium on Brazil's own debt in London, which had been declining since late 1831, began to rise.

Portugal's fiscal position had worsened as well since the 1831 loan. First the Terceira Regency, and then Maria's government, took new loans every year from 1832 onward to pay war expenses, or consolidate other obligations. One of Portugal's new loans went so far as to pledge the expected future settlement with Brazil on the 1823 loan interest arrears as a source of funding for the new debt.⁵⁷ Portugal's fiscal policy became unsustainable.

Both governments held outstanding claims against the other. Portugal obviously wanted to be reimbursed for the 1831 payments of interest by the Terceira Regency to the 1823 bondholders, and to receive the rest of the cash Brazil owed under the 1825 Treaty. Brazil sought credit for its outlays on ships for the Terceira Regency and for transporting Portuguese constitutionalist troops. In June of 1837 diplomats in London agreed to an adjustment on the amounts that Brazil owed, with the payment to Portugal to be financed by a Brazilian loan in London. However, a new cabinet in Rio de Janeiro rejected any increase in Brazil's net external debt, and did not present the accord to parliament for consideration. The cabinet instead declared it would "proceed to a [new] negotiation, in which the interests of the two governments may be attended and regulated."⁵⁸ Several hundred thousand pounds that the Portuguese government expected to receive from Brazil thus failed to materialize.

⁵⁶ Brasil, Ministério da Fazenda, Relatório do Ministério da Fazenda (RMF), 1835, pp. 8-9.

⁵⁷ Portugal arranged the loan through Isaac Goldsmid; Pinto, Dívida Pública Portuguesa, p. 46. Goldsmid would also be the contractor for the Brazilian loan of 1843 used to partly settle with Portugal (see below).

⁵⁸ Brasil, RMF, 1838, pp. 14-15; Brazil, Relatório da Repartição dos Negócios Estrangeiros, 1837, p. 13.

By this point in time, the annual guidebook for the London stock exchange claimed that both governments were on the hook for the 1823 loan. The Portuguese loan was effectively "a security of Brazil" which also carried "a right, on the part of the holder, to fall back (in the event of defalcation) on Portugal, the original borrower."⁵⁹ No such right was implied in the 1825 agreement between Brazil and Portugal. But since the Terceira Regency had been compelled by the London exchange to act in 1831 as if there was such a right as a condition for new borrowing, the market's understanding of matters had updated accordingly.

With the 1837 agreement dead on arrival in Rio de Janeiro, Portugal's debt exploded. Reflecting this was the risk premium on the 1823 Portuguese loan, which rose faster than that of Brazil's loan. The mean of the price-ratio series dropped from greater than one to less than 0.89. The negative break registers at the start of July in 1836. The failure of the Brazil-Portugal accord falls outside the 90 percent interval for the break date, but inside the 95 percent confidence interval. In October of 1837, with no money coming from Brazil, and in the midst of a revolt, Portugal suspended cash interest payments on its own debt.⁶⁰ All it could offer was promissory notes (themselves ostensibly bearing interest) as a substitute for coupon payments. Note that the loan of 1823 was excluded from the Portuguese suspension since it was carried by Brazil, not Portugal. But if Brazil had defaulted again on the 1823 loan, Portugal would be in no shape to step in and cover interest payments in the way that the Terceira Regency did in 1831, and in the way the stock exchange guidebook had claimed. The London market held that any new loan to Portugal "would be madness and ruin, even if it were practicable..."⁶¹

The market now saw the Portuguese loan as odious, even though Brazil was servicing it regularly. With a heightened risk of default on Brazil's own loan in the late 1830s, bondholders clearly feared that the 1823 loan would be the first to go under. In that case the Portuguese state would not be able to backstop it. The downward shift in the relative value of the bonds in 1836 identified by the econometrics indicates the rise in pessimism about Brazil's willingness to service the Portuguese loan of 1823 under fiscal stress, and Portugal's own fiscal collapse.

Settlement: 1843 to 1852

⁵⁹ Fortune's Epitome, 1838, p. 130.

⁶⁰ Decreto de 14 de Outubro de 1837.

⁶¹ Fortune's Epitome, 1838, p. 139.

Discussions to settle what Brazil owed for the 1828 suspension resulted in a new accord in 1842 (ratified by Brazil in early 1843). This agreement defined the payment from Brazil to Portugal to reimburse the interest the Terceira Regency had paid to the bondholders in 1831. The accord had two other key provisions. The first involved the source of the money Brazil would transfer to the Portuguese government. Brazil would raise a new loan in London, the proceeds of which it would give to Portugal. The second was that Brazil reaffirmed that it would pay off the Loan of 1823 before it matured--or in other words, pay it off on time. This was positive news. But it was only ten years away; Brazil had retired very little of the principal between 1825 and 1843.

Brazil would implement both provisions. In May 1843 it arranged a loan through Isaac Lyon Goldsmid for the money used to meet the first provision. The term was for 20 years, with a five percent coupon, and an issue price of 85.⁶² Scrip from the loan was first quoted in London in late July of 1843, with all installments paid up by May of 1844. Brazil's success in raising new money for the purpose of transferring it to Portugal is visible in the structural break in the ratio in mid September 1843. The price premium awarded to Brazil's bond over the Portuguese loan shrank. That Brazil embarked on a long run of primary fiscal surpluses about this time no doubt helped matters.⁶³ But the surpluses were a response to the increase in Brazil's debt load (both external and domestic). The London market continued to view the Portuguese loan as an odious debt to Brazil--more likely to be selectively defaulted on by Brazil than was Brazil's own loan. But on average the Portuguese loan of 1823 was priced at 96 percent of the Brazil loan, stronger than it had been since the time of the Regency loan in the early 1830s.

Most strikingly, Brazil implemented the second provision of the agreement. It repaid the Portuguese loan in its entirety before 1853. In 1852 Brazil took a loan through N.M. Rothschild & Sons for 30 years. It carried the lowest coupon rate and highest issue price that Brazil had secured in the London market to that point in time. The proceeds of the new loan settled the balance (still around one million pounds) on Brazil's debt to Portugal.⁶⁴ The final break in the

⁶² For the 1843 loan, AMFF 77.11.58, "Notarial Certificate of the Deposit at the Bank of [the] General Bond and Full Powers for [the] Brazilian Fund [of] 1843," 20 May 1843.

⁶³ On the primary balance see Summerhill, *Inglorious Revolution*, pp. 37-38.

⁶⁴ RAL 000/336/2, "Loan of £954,250 Sterling for the Service of the Brazilian Empire," 6 September 1852 (Notarized Copy, 12 November 1852); *RMF* 1853, [Table] 43, "Tradução do Contracto do Empréstimo de £1.040.600." The ex ante cost of capital to Brazil was only 5.53

ratio in 1851 is highly statistically significant, but the date is not very precisely estimated. The confidence interval spans more than 16 month, and easily encompasses the decree in Rio authorizing the loan in March of 1852, the preliminary contract between N.M. Rothschild & Sons and the Brazilian minister in London in July, and the subsequent final contract in September. The market anticipated this process, eliminating most of the gap between the prices of the Portuguese and Brazilian loans of the 1820s as early as February of 1852.

For Brazil, the retirement of the Portuguese debt coincided with an extremely sharp drop in its average risk premium in London. From the pre-1852 level of 5.1 percent it fell to only 150 basis points above consols for the rest of the 1850s--a decline of more than 70 percent.⁶⁵ It was a quick and extremely favorable shift in the market. Several other events around the same time worked in the same direction.⁶⁶ But it would be impossible to argue that repayment of the only debt on which Brazil had withheld interest was not a factor in Brazil's greatly improved standing in the market.

6. Conclusion

Brazil's takeover of the Portuguese loan in 1825 showed several markers of an odious debt. The loan was the main component of an indemnity that the Portuguese crown demanded as a condition for recognizing the independence of its former colony. Brazil's leaders desired this recognition. Portugal had undertaken a campaign to disrupt Brazil's efforts to borrow in London

percent per year (inclusive of fees). Brazil would not borrow that cheaply again until 1888; Summerhill, Inglorious Revolution, p. 72.

⁶⁵ Ibid., p. 131.

⁶⁶ One was that the Rio government resumed amortization of the external debt for the first time in some two decades, and began to ship gold to London for that purpose. The other was the resolution of the question of the African slave trade to Brazil--long a goal of British foreign policy and a source of diplomatic dispute between Britain and Brazil. Perhaps more importantly, Brazil avoided a costly war by defeating the Argentine dictator Juan Manuel de Rosas. On the resumption of regular amortization and the transfer of gold see AMFF 77.11.229, Joaquim José Rodrigues Torres [Ministro da Fazenda] to Messrs. Goldsmid, King, & Thompson, 14 May 1852; RMF 1853, pp. 9-10; Times, 7 May 1852 and 8 May 1852. On the elimination of major slaving activity on the Brazilian coast see UK The National Archives (TNA), Foreign Office 605/41, "Senhor Alcoforado's Narrative of the Brazilian Slave Trade from 1831 to 1853," [História sobre o infame negócio d'Africanos d'Africa Oriental e Occidental, com todas as ocorrências desde 1831 a 1853"], Rio de Janeiro, 31 May 1854. On the defeat of Rosas and withdrawal of Brazilian forces, Economist, 17 January 1852; Times, 21 February 1852; Economist, 14 August 1852.

in 1824, to keep other European powers from recognizing Brazilian independence, and to thereby undermine the prospects of trade agreements and treaties that might be beneficial to Brazil. The British government's position was to limit agreements with Brazil until the matter with Portugal was settled. Under this kind of pressure, Pedro accepted the remaining balance of 1.4 million pounds on the Portuguese loan as an obligation of Brazil's treasury. Brazil's own external debt already exceeded its ability to fully service its foreign-currency loans. Adding the Portugal loan meant Brazil's overseas debt grew instantly by 40 percent. Nonetheless, the market valued the Portuguese loan substantially higher than it did Brazil's own debt. The market's perception that the Portuguese debt was senior depended principally on the role played by British diplomacy in negotiating the treaty that transferred the debt to Brazil in the first place.

Miguel's usurpation of the throne in Portugal in 1828 led Brazil to selectively suspend service on the Portuguese loan; it continued to make interest payments on its own debt in London and Rio de Janeiro. One would expect the suspension would adversely impact Brazil's own credit in London. Suspension should signal the market that Brazil's "type" was less credible than originally believed. Yet the initial effect was only temporary. The sharp increase in risk on Brazil's bonds following the suspension was soon reversed. Brazil's risk premium fell to a new low by the end of 1829. The end of Pedro's costly campaign against Buenos Aires and the rebels in the Cisplatine helped. So did the fact that fears that Brazil would default on its own debt were not realized. The marginal cost of new borrowing during the suspension was high however, higher than the market yield on the existing debt would suggest. That Brazil could access the market at all, at any price, was remarkable. The view from the London exchange was that the early 1830s were tougher for Brazil than the period immediately following the suspension.

By holding recognition of Brazil's independence "hostage," Portugal was able to gain for itself some debt relief and compel mutualisation. Debt guarantees are only as good as the guarantor's willingness to pay. When a high quality borrower like Britain guaranteed a loan to Greece in 1833, the creditors were made safe from default. Britain performed when Greece did not. When the guarantee is extracted under duress, as was the case of Brazil, then performance was more doubtful, and the debt more likely to be considered odious. The involvement of a British diplomat in the agreement transferring the debt to Brazil created an unusual circumstance in which the market believed that the British government would not allow Brazil to default on the Portuguese loan. The 1828 suspension disabused the market of that notion.

Suspension on the Portuguese loan did not relieve Brazil of any debt, and in fact increased its cost. Parliament continued to allocate funds for the Portuguese debt. The executive branch diverted the money to the Terceira Regency instead of paying the bondholders. After the Terceira Regency had to pay arrears to the bondholders in 1831, Brazil ultimately reimbursed it, borrowing in London in 1843 to raise the money. The Brazilian government in effect paid twice for the suspension.

What the 1828 suspension did achieve was to allow Pedro to weaponize the Portuguese debt, in two ways. First, it immediately freed up the interest payments for other uses. The funds went to directly support the Terceira Regency at a critical moment. Second, the suspension made it hard for any government claiming to rule Portugal to borrow in London. The Regency got its first loan only by settling arrears with the bondholders. Miguel was in a less advantageous position, borrowing a limited sum only with great difficulty on Paris. The suspension worked precisely in the way it was intended, weakening the Miguelists more than it did the Regency.

After Miguel's defeat Brazil resumed payments on the Portuguese loan. But from that point forward, the market viewed the prospect of repayment as much less certain, depending on the state of Brazil's relations with Portugal, and especially on the question of resolving claims. Even after the loan had been serviced by Brazil for more than a decade, and the arrears between Brazil and Portugal fully settled, the market still viewed it as an odious debt until 1851, a few months before it was paid off entirely. Retiring the only loan on which Imperial Brazil had withheld interest payments had salutary effects on Brazil's creditworthiness in the London market.

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Figure 1 Risk Premium on the Brazilian Loan and the Portuguese Loan, 1825 to 1852

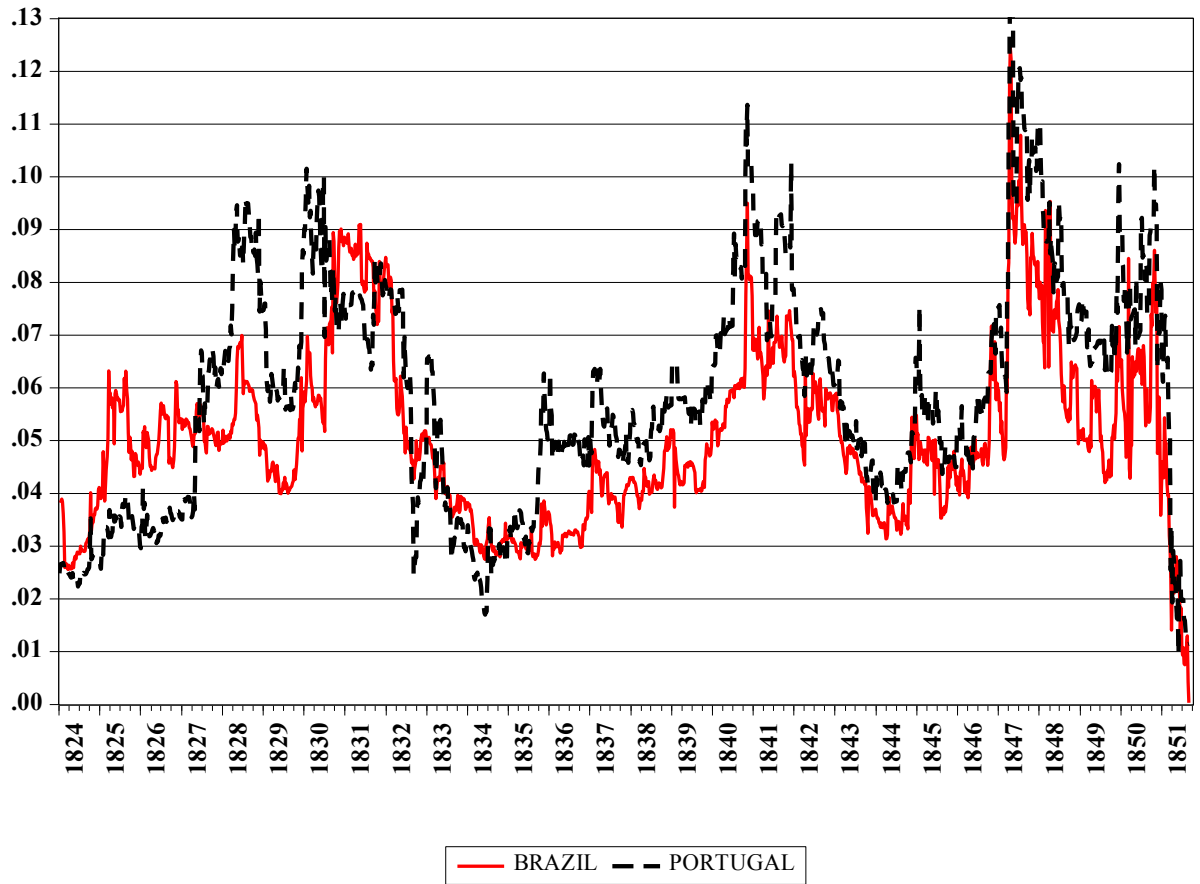


Figure 2. Prices of the Bonds of the Portuguese Loan and the Brazilian Loan, 1824-1852

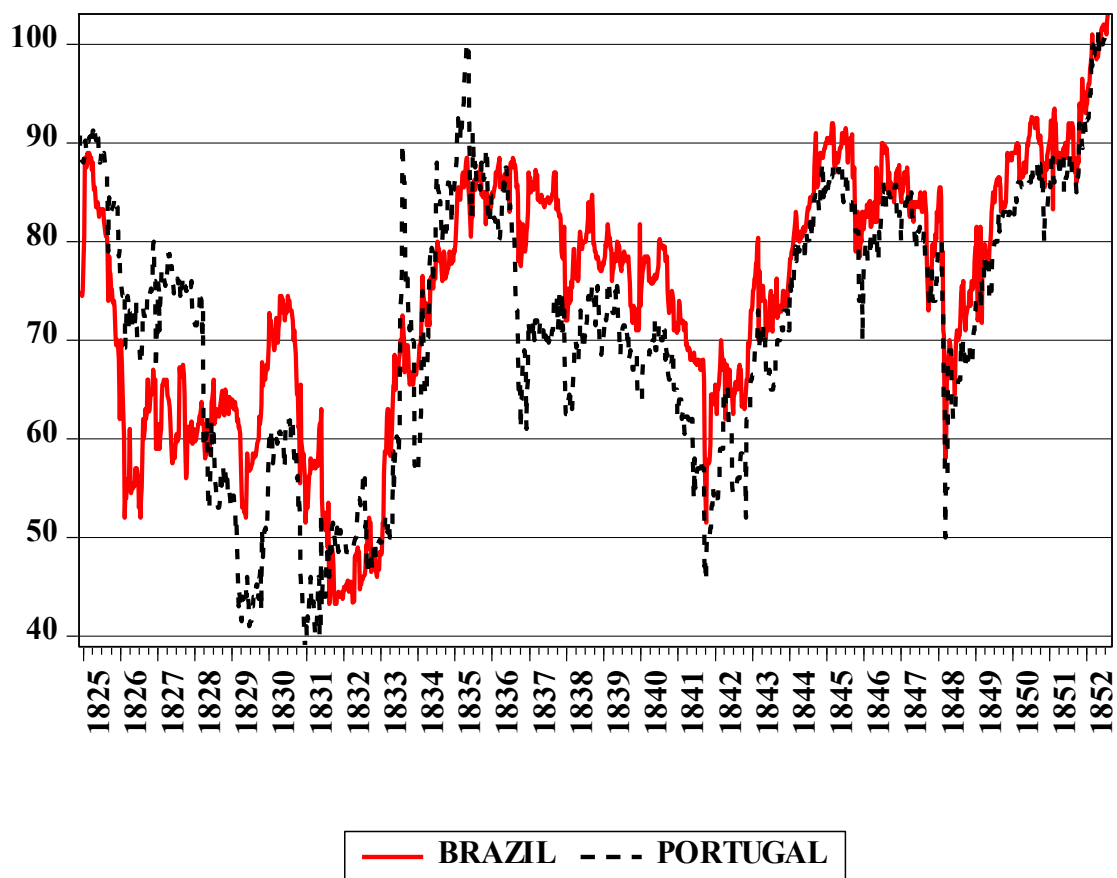


Figure 3. Ratio of the Prices of the Portugal and Brazil Bonds, 1825-1852

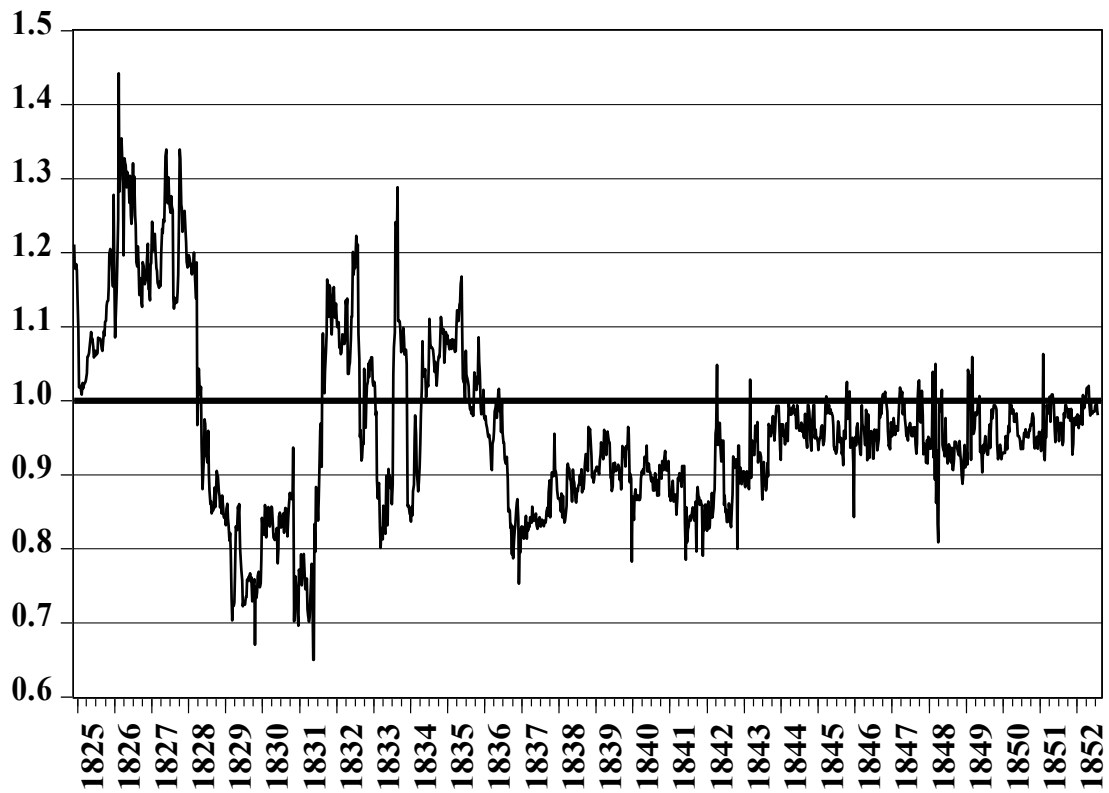
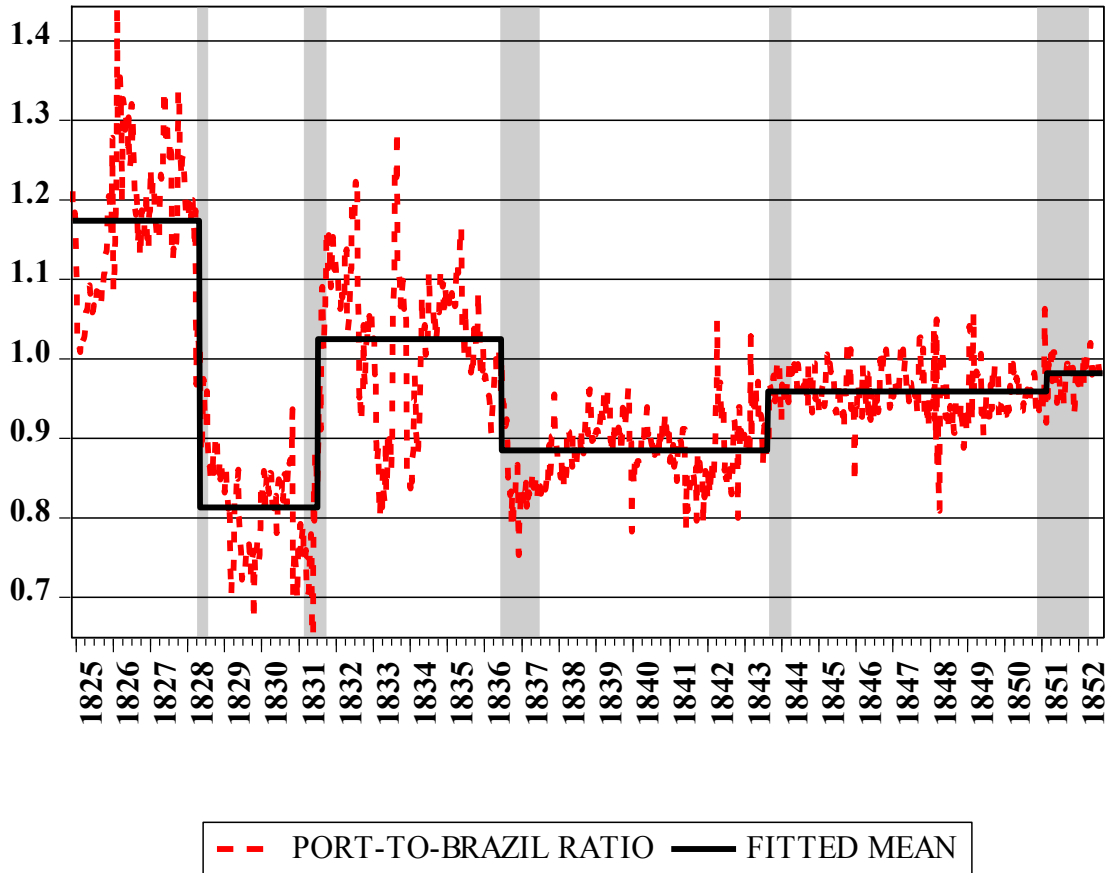


Figure 4. Structural Breaks in the Bond Price Ratio, 1825-1852



Note: Gray areas are the 90% confidence intervals (asymmetric) around each estimated break date.

Figure 5: "The Hue and Cry; or John Bull between two Knaves, Stools and the Heads of Police called in to rescue him from Pickpockets. Dedicated to Holders of Foreign Bonds in General"



Table 1. Main Features of the Portuguese Loan of 1823 and the Brazilian Loan of 1824/1825

	Portuguese Loan	Brazil Loan
Contract Year	1823	1824 and 1825
Year of Issue	1823/1824	1824/1825
Issuing Firm	B.A. Goldschmidt	Bazett, Farquhar, et al. (1824) Nathan M. Rothschild (1825)
Nominal Amount	1.5 million pounds	3.3 million pounds
Issue Price	87	81.4 (average)
Coupon Rate	5 percent	5 percent
Amortization Rate	3.3% per year	at least 1% per year
Coupon Frequency	Semester	Semester
Maturity Date	1 December 1853	1 April 1854
Original Funding	Tobacco and soap contracts	Customs revenues
Funding Source from 1825 forward	Brazil customs	Brazil customs

Table 2. Descriptive Statistics for the Risk Premium on the Brazilian Loan and Portuguese Loan, 1825 to 1852

	<u>Portugal Loan of 1823</u>		<u>Brazil Loan of 1824/25</u>		
	Observed Risk Premium	Interpolated Risk Premium	Observed Risk Premium	Selected on "Portugal" observed	Diff
Mean	0.0552	0.0576	0.0507	0.0495	0.0012
Median	0.0540	0.0566	0.0485	0.0477	0.0008
Maximum	0.1647	0.1647	0.1245	0.1245	
Minimum	0.0094	0.0093	0.0003	0.0003	
Std. Dev.	0.0222	0.0223	0.0163	0.0159	0.0004
Observations	1199	1494	1444	1146	

Table 3. Equality of Means Tests and Risk Premia on the Brazil and Portugal Loans

Method	df	Value	Probability
t-test	2886	11.25263	0.000
Satterthwaite-Welch t-test*	2676.548	11.25263	0.000
Anova F-test	(1, 2886)	126.6216	0.000
Welch F-test*	(1, 2676.55)	126.6216	0.000

*Test allows for unequal cell variances

Table 4. Unit Root Tests for the Risk Premia Series

	Brazil loan		"Portuguese" loan	
	ADF test	DF-GLS test	ADF test	DF-GLS test
Intercept	-3.343**	-2.867***	-3.137**	-1.805*
Intercept and Trend	-3.270*	-3.077**	-2.984	-2.516

Significance levels of the test statistic: *** 1%; ** 5%, *10%

Table 5. Portugal Bonds and Brazil Bonds, 1825-1852

Panel A: Unit root tests, individual bond price series

	Brazil loan		Portuguese loan	
	ADF test	DF-GLS test	ADF test	DF-GLS test
Intercept	-1.776	-1.796	-2.615*	-1.406
Intercept and Trend	-2.964	-2.194	-3.145*	-1.671

Panel B: Unit root tests, Portugal-Brazil bond price ratio

	ADF test	DF-GLS test
Intercept	-4.448***	-1.775*
Intercept and Trend	-4.486***	-3.275**

Significance levels of the test statistic: *** 1%; ** 5%, *10%

Table 6. Breaks in the mean ratio of the Portuguese bond price and the Brazilian bond price, 1825-1852

Break Weeks (T_i)	Boundary weeks for 90% Confidence Interval		Direction of the Change
2 May 1828	4 April 1828	11 July 1828	Decline
7 July 1831	23 February 1831	16 September 1831	Increase
1 July 1836	7 June 1836	17 June 1837	Decline
22 September 1843	1 September 1843	3 April 1844	Increase
31 March 1851	25 November 1850	8 April 1852	Increase

Parameter	β_i	Corrected Standard Errors
β_1	1.174	0.0289***
β_2	0.813	0.0175***
β_3	1.025	0.0208***
β_4	0.885	0.0071***
β_5	0.959	0.0029***
β_6	0.982	0.0045***

$R^2 = 0.733$

Number of breaks selected by:

F (5,1438)= 659.4

BIC= 9

n = 1444

Sequential procedure= 5

*** significant at 1% level

Repartition procedure= 5

Note: The parameters are the mean of the series of the ratio of the Portuguese and Brazil bond prices for each segment between breaks. Both the UD max and WD max tests support the alternative of breaks against the null of no break. With a trimming value of 5 percent, the minimum interval length between breaks is 72 weeks, and the maximum allowed number of structural breaks is nine.