How Do Reputations Form?
New and Seasoned Borrowers
in International Capital Markets

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Abstract

This paper shows how reputations formed across two centuries of international financial history. Evidence from the 1700s and 1800s indicates that investors used Bayesian logic to update their beliefs about the creditworthiness of sovereign borrowers. In particular, lenders offered worse credit to unproven borrowers than to better-known entities, to compensate for the risk that the newcomers could be "lemons." Countries that paid faithfully over a number of years, thereby distinguishing themselves from lemons, saw their risks premiums decline asymptotically toward the baseline rate of more "seasoned" debtors. Countries that defaulted, on the other hand, could not raise additional capital until they offered an acceptable settlement to creditors. The evidence, based on primary sources compiled here for the first time, shows that reputations formed in a particular way and profoundly influenced the flow of international capital.
1. Introduction

In the literature on reputation in international relations, there is a contradiction between two conventional wisdoms, one theoretical and the other empirical. The theoretical wisdom holds that concerns about reputation should play an important role in world politics. For centuries scholars and practitioners of international relations have cited reputation as a motive for keeping one’s word. A government that honors its commitments can acquire a reputation for reliability, which should help it attract partners for cooperative endeavors, whereas a government that breaks its commitments may signal that it cannot be trusted, prompting others to exclude it from beneficial international agreements. This argument, which appears in classical works of international relations as well as modern analyses of political economy, has achieved the status of conventional theoretical wisdom.

The empirical wisdom, in contrast, holds that concerns about reputation exert surprisingly little effect on world affairs. The mismatch between theory and evidence is well documented in research on military deterrence. For instance, the classic study by Snyder and Diesing found little proof that statesmen infer the resolve of an opponent from its behavior in previous crises.\(^1\) Statistical research points in a similar direction: policymakers seem to assign reputations only within narrow geographic regions, if at all.\(^2\) Finally, recent qualitative work on military crises of the twentieth century uncovered few cases in which reputation transferred from one conflict to another.\(^3\) Paul Huth aptly summarized the state of our scientific knowledge: “There is a substantial gap,” Huth wrote, “between the intuitive believe that reputations are an important cause of international conflict and the development of a compelling logical argument and empirical evidence to support such a conclusion.”\(^4\)

The clash between theory and evidence is also apparent in international political economy, particularly among students of international debt. In their massive study of sovereign debt since the 1850s, Lindert and Morton conclude that “investors seem to pay little attention to the past repayment record of borrowing governments. [T]hey do not punish governments with a prior default history, undercutting the belief in a penalty that compels faithful repayment.”\(^5\) Other studies, focusing on more limited time periods, concur. Cardoso and Dornbusch (1989), Jorgensen and Sachs (1989), and Eichengreen (1991) all maintain that governments that defaulted on foreign bonds during the Great Depression did not receive significantly worse terms of credit when they resumed borrowing after the Second World War. The lesson of history, it seems, is that international creditors ignore history!

In previous work I proposed a theory that reconciles these two conventional wisdoms, at least in the field of international debt.\(^6\) Specifically, I argued that *a government alters its reputation by surprising creditors – by doing the opposite of what creditors expect, given circumstances beyond its control*. For instance, a government that pays despite war and adverse

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1 Snyder and Diesing (1977), p. 187.
6 Tomz (1999a, 1999b).
economic shocks, such as rising world interest rates or deteriorating commodity prices, will improve its standing in the eyes of creditors. By the same logic, a government that defaults under favorable economic conditions will see its reputation sink. But creditors will not deprecate a borrower that defaults under duress, nor will they esteem a government for paying when the yoke is light. Credit history does affect reputation, but only under certain conditions.

As a first step toward testing this theory, I examined the behavior of capital markets during the 1930s and immediately after World War II. Using statistical and qualitative evidence, I identified several governments that surprised creditors by paying despite economic hardship, and I showed that those governments acquired favorable reputations that helped them borrow when others could not. My analysis also demonstrated that creditors reacted harshly toward surprising defaulters, who paid less than external circumstances seemed to warrant, but treated “expected” payers and “expected” defaulters roughly the same. Thus, creditors did discriminate between defaulters and payers, but only after taking mitigating circumstances into account.

This paper extends the empirical analysis by testing three additional implications of my theory of reputation. First, investors should offer worse credit to an unproven government than to better-known entities, as compensation for the risk that new borrower could be a “lemon.” The compensation will take the form of a lemon premium: an extra interest charge, above and beyond the baseline rate that a “seasoned” borrower would pay for access to foreign capital. Furthermore, the premium should be roughly the same for all new borrowers in the same cohort, especially under conditions of low information when other data are not available, and credit histories offer the basis for discriminating across borrowers.

Second, if the new borrower services its debts punctually over a number of years, thereby distinguishing itself from a lemon, its access to credit should eventually improve. The improvement should occur even if the borrower pays during good times, but should be especially pronounced if it honors the debt when external conditions would seem to warrant a default. Interestingly, this seasoning process should exhibit diminishing marginal returns, with each additional payment enhancing reputation by a smaller amount. At some point, when investors become highly certain that the government is not a lemon, paying during a good situation will only preserve – not improve – the government’s reputation. Thus, the risk premiums of seasoned borrowers should converge asymptotically to a baseline rate.

Third, impenitent defaulters should not be able to raise new capital on international markets. If the borrower defaults and refuses to offer adequate compensation, rational investors will shy away from extending new loans, for fear of throwing good money after bad. Only when the debtor makes an adequate settlement, thereby proving that it is not a lemon, will investors commit new funds. Put another way, only a costly signal will wipe the lemon stain from a country’s credit record.

I test these hypotheses against a unique collection of data from the eighteenth and nineteenth centuries. Specifically, I identify key moments when new borrowers emerged on the scene, and I ask how the markets treated those newcomers, relative to more established ones. I also investigate the dynamics of reputation by testing whether the lemon premium declined over time, conditional on a healthy record of repayment. Finally, I follow the history of countries that
defaulted on their foreign debts to see whether they could raise new capital without first offering a settlement to creditors. The empirical analysis, based on primary sources that have been compiled here for the first time, strongly supports the all three hypotheses about how reputations form in capital markets.

The analysis proceeds in several steps. In Section 2, I sketch the theory of reputation that I have developed at greater length elsewhere, to motivate the three hypotheses considered in this paper. Sections 3 through 5 test the hypotheses against evidence from the 1700s, the 1820s, and the 1870s, and Section 6 concludes.

2. A Theory of Reputation in Capital Markets

I argue that, either consciously or subconsciously, most investors learn according to Bayesian principles: they update their beliefs about the likelihood of default in response to new information. At each stage in the learning process, investors develop a posterior belief that represents a compromise between their pre-existing views and the newly arriving data. If the incoming data corroborate what investors already thought, beliefs will remain roughly the same. In this case, the confirmatory data will give investors greater confidence in their estimates but should not lead them to modify the estimates themselves. If, on the other hand, the data challenge existing perceptions about the debtor’s propensity to meet financial commitments, investors will adjust their beliefs by taking a weighted average of their prior views and the new data. The greater the reliability of recent evidence, relative to historical information summarized in prior opinions, the more investors will disregard their preconceptions and assign a heavy weight to breaking news.

My argument does not require that all people possess identical cognitive abilities or apply Bayesian precepts to all spheres of daily life. After all, psychologists have identified a conservative bias in human learning: once people form a first impression, they often downplay dissonant evidence and give undue weight to their initial view. The proper question is not whether people think like Bayesians in all circumstances, but under what conditions their reasoning most nearly approximates the Bayesian ideal. For two reasons, the approximation should be close when people act in their capacity as international investors. First, investors -- and the rating agencies that advise them -- have a strong profit motive to update their beliefs in response to new information, instead of clinging to outmoded views that could lead to financial ruin. Moreover, investors generally do not have an ideological stake in defending views about the creditworthiness of a foreign government, whereas they might respond defensively to data that challenged their religious convictions. Thus, I argue that most international investors behave as intuitive Bayesians, even though they may not know the precise mathematical formulation of Bayes's rule.

When learning about the likelihood of default, investors and rating agencies can use Bayesian logic to analyze many sources of information. For instance, they can study data on

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7 A clear discussion of this phenomenon appears in Nisbett and Ross (1980, ch. 8). Most psychologists rely on laboratory experiments with undergraduates, but Tetlock (1999) has found a similar conservative bias in studies of “expert” decisionmakers.
economic and political conditions affecting the borrower and the territory it governs. Some variables, such as the endowment of natural resources and the incidence of wars and revolutions, have been available to investors for hundreds of years. Other indicators, including national income, were only developed in the early 1900s and collected systematically after the Second World War. These sources of information can help investors update their beliefs about a particular borrower, but they may not provide a complete picture of the risks and potential returns. To improve their forecasts of repayment, investors must also consider the borrower’s history of behavior, particularly its record of compliance with international debt contracts. Credit histories, carefully recorded by investors and institutions for centuries, can shed light on political and economic characteristics that would be difficult or impossible to measure directly. I now explain how investors use Bayesian principles to analyze the credit history of a government and sort debtors into categories, depending on the perceived risk of default.

Investors understand that defaults can arise due to circumstances beyond the debtor's control. Most countries are small in relation to global markets, and therefore wield little influence over the real international interest rate and the prices of tradable goods. These exogenous factors directly affect a sovereign's ability to obtain the foreign exchange for servicing international debts. Countries are also powerless to prevent droughts, floods, hurricanes and earthquakes from destroying crops and manufacturing facilities. Through their effect on the domestic economy, natural disasters can reduce government revenues and divert resources from debt servicing to immediate domestic needs. Other things equal, a government is more likely to interrupt payments when suffering from rising interest rates, declining terms of trade, and natural disasters than when external conditions are relatively favorable. Investors take such contingencies into account when negotiating international loan contracts. This explains why, on average, governments that are vulnerable to external shocks must pay higher interest premia and accept smaller loans than countries that are better insulated from adverse developments.

Investors also understand that governments respond differently to similar exogenous shocks. Some governments pay their debts under virtually any conditions. When the price of their exports falls or the supply of international capital dries up, these “stalwarts” tighten their belts, thereby leaving enough public revenue and foreign exchange to uphold their contractual obligations to foreigners. Other governments are “fair-weather payers” who remain faithful during auspicious years but default when external conditions deteriorate. Still other governments are “lemons” that tend to break their contracts, regardless of the external situation. If these lemons could attract foreign capital, they would fall into arrears or even repudiate their debts because of domestic political pressure or incompetence in managing economic affairs. My theory focuses on three ideal types of debtors: stalwarts, fair-weather payers, and lemons. In practice, some governments may fall between these stylized categories, but a simple theory with three types will generate many interesting predictions and provide a basis for empirical work. Adding more types would complicate the analysis without yielding additional insights.

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Credit histories can help investors discern the type of debtor they are confronting. In practice, bondholders and banks cannot directly observe the resolve and competence of a foreign government, but they do have beliefs about whether they are dealing with a stalwart, a fair-weather payer, or a lemon. These beliefs constitute the image or reputation of the debtor in the eyes of international investors. As with all beliefs, assessments of the hidden characteristics of a foreign debtor may prove erroneous, but they represent the best guesses that investors can make with the information at their disposal. One important source of information is the record of government responses to exogenous shocks. Investors can easily observe whether a government paid its foreign debts, and they have good records of national disasters, changes in global interest rates, and fluctuations in commodity prices that might have compelled a government to break its contracts. By considering these two pieces of information – exogenous shocks and actual payments – investors can draw inferences about the resolve and competence of the government. Thus, credit histories can provide data on characteristics of the debtor that would be difficult or impossible to measure directly.

I contend that a government can change its image by acting contrary to its perceived type, given widely recognized circumstances beyond its control. A few examples should illustrate this prediction, which follows Bayesian rules of inference. Suppose that a government is widely perceived as a fair-weather payer. If this government defies expectations by servicing its debts under austere conditions, it will improve its standing in the eyes of investors by exhibiting greater resolve and competence than previously anticipated. By the same logic, a decision to default under favorable circumstances will cause the government's reputation to sink. But a putative fair-weather payer that meets expectations by defaulting under duress and paying when the yoke is light will experience no change in reputation. In these cases, the payment history conveys no new information about the government’s reverence for international obligations or its proficiency as an economic manager. Thus, governments that are perceived as fair-weather payers should not suffer much reputational loss by defaulting during moments of external crisis such as a world war or a global economic contraction, provided that they offer an acceptable settlement (partial payment) to creditors.

A parallel prediction applies to other types of debtors. Consider a putative stalwart, a government that is widely believed to honor its obligations during good times and bad. Any default by this government would seem surprising and lead investors to assign lower credit ratings, reflecting news that the government was not always willing or able to service its international debts. Given their preeminent reputations, alleged stalwarts must run if they hope to stand still: preserving a class-A rating requires paying under nearly all circumstances. At the opposite extreme, governments with lemon-like ratings have many opportunities to enhance their reputations. By offering an adequate settlement on defaulted debt and servicing any loans it manages to receive, a reputed lemon can elevate its standing and regain fuller access to international capital markets. In all these examples the lesson is the same: investors change their beliefs about type when a government acts in surprising ways. A summary of these predictions appears in Figure 1.
I claim that bondholders and bankers calibrate the terms of credit based on beliefs about the debtor’s type. Other things equal, putative stalwarts will receive easier credit than reputed fair-weather payers, which, in turn, should enjoy better access to international capital markets than governments that have been classified as lemons. Any government that is widely believed to pay during good times and bad will attract large loans at nearly risk-free rates, without having to provide collateral or other legal enhancements. Investors will rely more heavily on risk premiums and contractual protections when dealing with apparent fair-weather payers, since those governments are expected to default when external conditions turn sour. Finally, investors will refuse requests for loans to proven lemons and governments that have not settled their existing defaults. These prospective borrowers pose such great risks that credit rationing is the optimal course of action.

My argument has several important corollaries that are the focus of this paper. First, investors should charge the highest risk premium to unfamiliar borrowers, who are not yet known to be different from lemons. In an efficient market, the premium should be sufficient to compensate for the risk that some new borrowers could be lemons. Moreover, the lemon premium should be approximately the same for all new borrowers in the same cohort. Especially when direct measures of economic and political conditions are not available, the principle of insufficient reason comes in to play, causing rational investors to assign the same lemon probability (and premium) to each of the unknown entities. The premium will exist in all markets, but its magnitude may vary across time, depending for example upon the known proportion of lemons in the general population.

Second, the lemon premium should decline over time, provided that the government continues to service its debts. This phenomenon should occur even in the absence of an external shock that puts the debtor to the test. The potential existence of lemons makes possible this improvement during “good times.” Investors know that stalwarts and fair-weather payers honor their debts under auspicious conditions, whereas lemons tend to default even during relatively favorable periods. Thus, a government that pays during good times can distinguish itself from a lemon. Whether this behavior has any effect on reputation depends on prior beliefs about the government. If investors knew the government was not a lemon, the behavior would simply confirm expectations and cause no change in reputation. If, on the other hand, investors thought the government might have been a lemon, payment would count as contrary evidence and cause

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9 Diamond (1989) offers a similar argument, but his model is not suited for the international context, since it presumes that lenders can foreclose on the assets of defaulters, and it allows no room for exogenous shocks. See also Eaton (1996).
a reputational gain. This process will exhibit diminishing marginal returns, with each additional payment enhancing reputation by a smaller amount. At some point, when investors become highly certain that the government is not a lemon, paying during a good situation will only preserve – not improve – the government’s reputation.

Third, a government that defaults – whatever the circumstance – will find itself unable to raise new capital until it offers a satisfactory settlement to creditors. Governments that pay nothing cannot pass themselves off as something better than a lemon. How much a debtor needs to pay may depend on a variety of factors, of course. In theory, there may be some critical amount that no lemon would pay to extricate it from default, such that any government that offered a payment of that magnitude would be welcomed back into the fold. The required payment might also depend on the circumstances that motivated a default: other things equal, a country that defaulted in response to an adverse external shock would probably face a lower settlement hurdle than a country that rebuffed its creditors without good cause. Most likely, the evaluation would need to be made on a case-by-case basis, perhaps by a committee of bondholders that could investigate the circumstances and opine on the fairness of a settlement. In fact, bondholder committees have existed since the 1700s for precisely this purpose.

Having sketched the theory, I now turn to an empirical assessment of the aforementioned corollaries. I begin by considering the role of reputation in the Amsterdam market of the 1700s.

3. Reputation and the Amsterdam Market

During the eighteenth century, many sovereign governments borrowed money on international markets. With few exceptions they turned to the Dutch province of Holland, a region of unrivaled wealth and commercial supremacy, and one with surplus capital that could be channeled abroad. The leading governments of the world and a number of minor principalities all floated bonds on the Amsterdam market during the 1700s. Lending expanded steadily throughout the century, reaching a peak just before the Napoleonic Wars that brought the system to a halt. By investigating how Dutch investors treated new versus seasoned borrowers, we can gain a clearer sense of how reputations formed during this critical period.

Dutch investors of the 1700s did not possess detailed information about the socio-economic health of foreign borrowers. According to James Riley, “neither the political nor the commercial news available in Dutch periodicals was sufficient to evaluate credit worthiness among debtor states. Nor were government revenue and expenditure accounts often published elsewhere.” Without reliable information about political and economic fundamentals that affected the propensity to default, Dutchmen probably leaned on the credit history of governments when deciding where to invest.

\[11\] Other important financial centers included Geneva, Hamburg, Genoa, Frankfurt, Vienna, and London, but Amsterdam dominated the market for foreign government loans.
To see whether investors demanded higher yields from new borrowers, I needed information about when each country raised debts in Amsterdam. Working with a colleague at the University of Utrecht, I built an inventory of every major foreign government loan that was launched on the Amsterdam market between 1695 and the Napoleonic wars. Data came from the Netherlands Economic History Archive (home to nine boxes of original prospectuses concerning Dutch loans to foreign states) and from a variety of published sources. Our final list contained 465 bonds, the first issued in 1695, when Deutz & Soon underwrote a 1.55 million guilder loan to the government of Austria with an interest rate of 5 percent and a maturity of 12 years. Although we may have overlooked a few bonds, our inventory of Dutch loans is the most comprehensive and detailed in existence, and it allows reasonably precise measurement of when countries borrowed in Amsterdam during the eighteenth century.

Bond yields were more difficult to compile. The yield, often measured as the nominal interest rate divided by the market price, allows us to compare the riskiness of loans. The earliest surviving quotations appear in a handwritten report from Vizconde de la Herreira, Spanish Ambassador to the Hague, to his foreign minister, the Marqués de Grimaldi. Herreira’s report, on deposit at the General Archive of Simancas in Spain, contains interest rates and prices for several government loans that were traded in Amsterdam during July 1771. Presumably the Marqués wanted such information for reference and comparison, since Spain had tapped the Dutch market only one year earlier. I used the data in Herreira’s report to compute current yields for sovereign borrowers.

Table 1 reports the bond yields, along with the years in which the countries first borrowed. In this table and throughout the paper, I define a new borrower as a country with a credit history of less than ten years. According to the table, the average yield on loans to new borrowers was a full percentage point higher than yields for more seasoned debtors. In relative terms this represents a substantial difference: new borrowers were charged approximately 25% more than more established participants in capital markets. Moreover, this estimate does not include the outsized commissions that underwriters almost certainly demanded from new borrowers, to cover the extra risk and labor costs of marketing the bonds of unproven states.

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13 Printed sources included Buist (1974), Elias (1903/5), Riley (1980), and van Winter (1977). I thank Joost Joonker and Nico van Horn for their work in the Dutch archives. The sample begins with 1695. There were earlier Dutch loans, the first taking place in 1616 when a single individual advanced 250,000 to the elector of Brandenburg. But most Dutch capital flows during the seventeenth century were what we would now call foreign direct investment, rather than international lending.

14 *Archivo General de Simancas* (Spain), Sección de Estado, Legajo 6364, Vizconde de la Herreira to Marqués de Grimaldi, 19 November 1772, con anexo.

15 For each country, I identified the lowest nominal interest rate on bonds that were not guaranteed by a foreign power, and then calculated yields based on the average of the minimum and the maximum quoted price for bonds at that interest rate. The report also contains interest rates and price quotations for loans to plantation communities in the West Indies, including Essequibo/Demerara, the Danish Islands, Grenada, and Surinam. As these were not sovereign, and thus not comparable with countries like Denmark and Sweden, I excluded them from the analysis. Herreira did not list prices for two seasoned borrowers, England and France. Fortunately, in 1771 France issued a 4% bond, which I used to approximate the yield. Yields on English bonds were at least as low, so the addition of England in Table 1 might only accentuate the difference between seasoned and new borrowers. Herreira also failed to include an entry for one new borrower, Prussia, which floated its first bond in 1769 at 5%, the level charged to new borrowers at the time.
Table 1: Investors demanded higher yields from less seasoned borrowers  
Amsterdam Capital Market, July 1771  

<table>
<thead>
<tr>
<th>Seasoned Borrowers</th>
<th>Earliest loan</th>
<th>Yield in July 1771</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>1695</td>
<td>3.9</td>
</tr>
<tr>
<td>France</td>
<td>1720</td>
<td>4.0</td>
</tr>
<tr>
<td>Saxony</td>
<td>1730</td>
<td>4.0</td>
</tr>
<tr>
<td>Danzig</td>
<td>1734</td>
<td>4.9</td>
</tr>
<tr>
<td>Denmark</td>
<td>1757</td>
<td>4.0</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td><strong>4.1</strong></td>
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<table>
<thead>
<tr>
<th>New Borrowers</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Leipzig</td>
<td>1764</td>
<td>4.2</td>
</tr>
<tr>
<td>Mecklenburg</td>
<td>1766</td>
<td>5.0</td>
</tr>
<tr>
<td>Sweden</td>
<td>1767</td>
<td>5.2</td>
</tr>
<tr>
<td>Brunswick Luneburg</td>
<td>1767</td>
<td>5.1</td>
</tr>
<tr>
<td>Russia</td>
<td>1769</td>
<td>5.1</td>
</tr>
<tr>
<td>Spain</td>
<td>1770</td>
<td>6.1</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td><strong>5.1</strong></td>
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</tbody>
</table>

*Source:* Yield data came from the report of Vizconde de la Herreira, 19 November 1772. The yield for France is approximated from the 4% bond that it launched in 1771. Loan dates were obtained from Herreira and from prospectuses at National Economic History Archive, Amsterdam.

The considerable disparity in yields almost certainly did not arise by chance. A simple t-test for equality of means indicates a probability of less than 1 in 100 of observing a difference this large, if investors truly did not discriminate according to the length of the credit history.\(^\text{16}\) This result is robust to the elimination of any country in the list and to changes in the “cut-date” that separates new from seasoned borrowers.\(^\text{17}\) Further note that, within the class of new borrowers, the yield apparently fell with experience. Leipzig, the most proven of the new entrants (with approximately 7 years of faithful repayment), boasted a yield only slightly higher than the average of its fully seasoned counterparts. Thus, the best surviving data show that investors demanded a premium from countries that lacked a substantial credit history.

The gap in Table 1 gradually narrowed as the new borrowers repaid their debts, demonstrating that they, too, could be trusted. By the 1780s the risk differential in Table 1 had almost completely disappeared. Having distinguished themselves from lemons through more than a decade of punctual repayment, countries like Russia and Sweden could borrow in the 1780s at the same low rates as Austria and Denmark. At precisely that moment, however, Poland and the United States approached the Dutch market for the first time. Investors charged those new borrowers a premium, perhaps to guard against the risk of lemons.

Evidence comes from a second unique document, a “price courant of the diverse obligations that existed in Amsterdam” on October 6, 1783. For several foreign securities, the

\(^{16}\) The difference in means is 0.96 percentage points, with a standard error of 0.30 and a t-statistic of 3.2 with 8.8 degrees of freedom. The probability of observing a difference this large in repeated draws from populations with equal means is 0.01. The 95 percent confidence interval around the difference in means runs from 0.28 to 1.63.

\(^{17}\) For instance, reclassifying Leipzig as a seasoned borrower only strengthens the result, and shifting Denmark to the set of new borrowers weakens the finding only slightly.
document gives nominal interest rates and bid-ask prices, which I used to compute the current yield. The results appear in Table 2, which gives yields of the principal foreign borrowers. The top portion of the table contains the most seasoned borrowers, all of which had issued debt on the Dutch market before the 1760s. The middle cluster is composed of sovereigns that launched their first bonds in Amsterdam during the years 1764-1770, and the bottom section reports the yields of two new states, Poland and the United States, which did not approach the Dutch market until 1776 or later.

Table 2: Yields of established borrowers converged, but new borrowers were charged a lemon premium

<table>
<thead>
<tr>
<th></th>
<th>Earliest loan after Jan 1695</th>
<th>Yield in Oct 1783</th>
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<tbody>
<tr>
<td><strong>Long-Established Borrowers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>1695</td>
<td>4.0</td>
</tr>
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<td>France</td>
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<tr>
<td>Denmark</td>
<td>1757</td>
<td>4.1</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td><strong>4.4</strong></td>
</tr>
<tr>
<td><strong>Recently Seasoned Borrowers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leipzig</td>
<td>1764</td>
<td>4.0</td>
</tr>
<tr>
<td>Mecklenburg</td>
<td>1766</td>
<td>4.0</td>
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<td>5.4</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td><strong>4.4</strong></td>
</tr>
<tr>
<td><strong>New (Unseasoned) Borrowers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>1776</td>
<td>5.0</td>
</tr>
<tr>
<td>United States</td>
<td>1782</td>
<td>5.1</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td><strong>5.0</strong></td>
</tr>
</tbody>
</table>

Source: Author’s calculations from Oudermeulen (1791). Loan dates are from Herriera and from prospectuses at National Economic History Archive, Amsterdam

A comparison of the yields across these three clusters supports the theory of reputation in Section 2. On average, bonds of highly seasoned borrowers in the top panel carried a yield of 4.4 percent. Those countries had long ago demonstrated their commitment to pay, causing investors to waive the lemon premium. Additional years of borrowing and repayment did not, therefore, convey new information about the creditworthiness of the borrower, which helps explain why the yield on bonds in the top panel was no lower than what investors had demanded in 1771. By continuing to borrow and repay during the late eighteenth century, countries such as Austria, Denmark and France simply confirmed what investors already knew.

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18 Oudermeulen (1791), Vol II, Part 2, p. 263-68. As with the Herriera data, I identified the lowest nominal interest rate on bond that was not guaranteed by a foreign power, and then calculated yields based on the average of the minimum and the maximum quoted price for bonds at that interest rate. In the case of Poland this was not possible, since the only entry pertained to a 5% bond guaranteed by Russia, which must have improved the marketability of the issue. Thus, the yield for Poland in Table 2 probably represents a lower bound.
Remarkably, countries in the middle panel also boasted yields of 4.4 percent on average, down from 5.1 percent a decade earlier. By 1783 investors had monitored the repayment patterns of newcomers like Russia and Sweden for more than a decade, and had been satisfied with the punctual record of repayment. Consequently, most of the countries in the middle panel joined the 4-percent club. Based on the data in Table 2, it is impossible to distinguish the yields of long-established borrowers with those in the intermediate group. Apparent, the new borrowers of 1765-70 had become proven veterans of the 1780s.

The result holds even if we eliminate small principalities and focus on major powers: Austria, France and Denmark in the top panel, and Russia, Sweden, and Spain in the middle. Using that subset of data, the mean for well-established debtors is approximately 4 percent, while the average for more recently seasoned borrowers is half-point higher. Though substantial, a gap of that size represents a marked improvement over the 1.5 percentage-point differential that separated the seasoned and new powers a decade earlier. This difference would continue to narrow over the next few years. Figure 2 traces the evolution of bonds for Spain, whose relatively high yield in 1783 raised the average for the intermediate group. The figure shows that, by the late 1780s, Spanish yields had converged asymptotically with the other more seasoned states. At that point, all six powers could borrow in Amsterdam at the same low rate of 4 percent.

![Figure 2: Yields on Spanish bonds](image)

How did investors treat the new borrowers in Table 2? The bottom panel displays the yields for Poland and the United States, which raised debt on the Dutch market for the first time in the late 1770s and early 1780s. Investors demanded the standard new-country rate of 5 percent from both states, repeating a pattern of discrimination that we had observed in 1771. The United States, in particular, had trouble raising money in Amsterdam, and John Adams decried

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19 The difference between the average yields of the two groups is only 9 basis points (0.09 percentage points), with a 95% confidence interval that runs from -0.69 to +0.87.
the high interest rates and commissions that his government was required to pay. Although the United States did not always maintain punctual service on those early loans, Hamilton’s funding plan of 1790 helped reestablish the credit of the United States, which eventually proved its creditworthiness and joined the ranks of low-risk borrowers.

Consider a final piece of evidence from this period: the yields of foreign borrowers clustered at two levels, 4 and 5 percent, during the late 1700s. This bimodal distribution is perfectly intelligible given the information-poor environment of the eighteenth century. Investors distinguished seasoned borrowers from unseasoned ones, but within each category it proved difficult to split hairs, since standard economic indicators of wealth, revenues and foreign trade were not available on a timely and consistent basis. Consequently, the credit history of the country assumed an overriding importance, virtually dictating the rate that the borrower was charged. By the nineteenth century, the publication of basic indicators introduced more “noise” into the data, thereby raising the variance within each category, but – as we will see – it did not undermine the fundamental discrimination between seasoned and unseasoned borrowers. Despite the proliferation of economic and political data, reputation remained the most important factor in the foreign investment equation.

In summary, Dutch investors of the 1700s applied a simple rule when lending to foreign governments: charge higher rates to unseasoned borrows than to those with a track record of repayment. Through a policy of regular annuity payments and punctual amortization, governments could signal their creditworthiness and obtain lower interest rates, but diminishing returns eventually set in. In the Amsterdam market the yields of proven borrowers asymptotically approached 4 percent, the baseline rate for seasoned sovereigns. Empirically, the process of convergence took anywhere from ten to twenty years. Thus, the patterns of the 1700s accord closely with the theory in Section 2.

Dutch lending reached its peak in the 1770s-90s, only to be interrupted by the Napoleonic wars. When French troops occupied Amsterdam in 1793, the underwriting of new debt virtually ground to a halt. The crisis naturally led to a pandemic of defaults across Europe, but all the major borrowers settled their arrears and resumed payment after the hostilities ceased. For instance, Russia defaulted in 1812 in response to the Napoleonic invasion, but restarted payments soon after Waterloo. According to Marten Buist, the quick resumption of payment after an excusable default “earned Russia a reputation for creditworthiness and solidity … from which she was to profit until the collapse of the czarist régime in 1917.” In the aftermath of war, though, a new financial center had emerged, one located not in Holland but across the North Sea in England. In the next section, we investigate the London market of the 1820s to see how reputations formed in that era.

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20 Van Winters
21 Riley (1980, p. 55, 93-94) provides qualitative confirmation of these results. “Numerous sources indicate that investors judged borrowers chiefly by the regularity of annuity payments and the punctuality of reimbursements. Those satisfied, Dutch rentiers were confident in the integrity of their investment and, when service was paid regularly, generally willing to reinvest in prolongations or take up fresh loans.”
4. The London Market in the Early 19th Century

The British lending boom began in 1817, when Baring Brothers collaborated with the Dutch house of Hope & Co. to underwrite a loan for France. A year later, N.M. Rothschild arranged the first postwar foreign loan denominated in sterling: a 5 million pound credit for the Kingdom of Prussia. By the mid 1820s, most European governments had raised debt on the London market, as had the new Latin American states that had recently won independence. The sheer number of new entrants makes this an interesting period to test the hypotheses that were presented in Section 2.

Like their Dutch predecessors, British investors of the early nineteenth century operated under conditions of poor information. “The financial press was virtually non-existent,” so investors could not turn to specialized financial newspapers and journals for information about the creditworthiness of foreign states. Indeed the standard references of the nineteenth century, including the Bankers Magazine and the Economist, only began publication in the 1840s. Before then, investors learned about foreign countries through popular travel accounts, an occasional investment manual, and a money-market column that first appeared in the London Times and other newspapers around 1822. It is worth emphasizing that British papers did not station correspondents in Latin America and other distant regions, but instead relied upon merchant reports and foreign newspapers that arrived via mail packet. Under such circumstances, the reputation of the foreign borrower may have assumed prime importance.

As in the previous section, I compare the yields of new versus established borrowers. Table 3 summarizes the data in six-month intervals from July 1824 through July 1825. The upper half of the table gives yields for seasoned borrowers, who had proven their mettle on the Amsterdam exchange, thereby demonstrating a propensity to repay foreign debts. In contrast, the bottom half reports the yields for new states of Latin America and Europe that emerged after the Napoleonic wars and borrowed for the first time in the 1820s. The dates in parentheses represent the first known loan that the government floated on world markets since 1695. In this table, “Colombia” refers to the territory of Gran Colombia, which comprised the future nations of Colombia, Ecuador, and Venezuela.

\[23\] Dawson (1990), p. 17.
Table 3: Yields for new borrowers exceeded yields for seasoned ones
London Capital Market, 1824-1825

(dates in parentheses indicate the earliest loan since 1695)

<table>
<thead>
<tr>
<th></th>
<th>Yields in 7/1824</th>
<th>Yields in 1/1825</th>
<th>Yields in 7/1825</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seasoned Borrowers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria (1695)</td>
<td>5.3</td>
<td>5.2</td>
<td>5.1</td>
</tr>
<tr>
<td>Denmark (1757)</td>
<td>5.1</td>
<td>4.9</td>
<td>5.0</td>
</tr>
<tr>
<td>France (1720)</td>
<td>5.0</td>
<td>4.8</td>
<td>4.9</td>
</tr>
<tr>
<td>Naples (1807)</td>
<td>5.7</td>
<td>5.5</td>
<td>5.4</td>
</tr>
<tr>
<td>Portugal (1802)</td>
<td>5.7</td>
<td>5.6</td>
<td>5.7</td>
</tr>
<tr>
<td>Prussia (1769)</td>
<td>5.1</td>
<td>5.0</td>
<td>4.9</td>
</tr>
<tr>
<td>Russia (1769)</td>
<td>5.3</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td><strong>Average Yield</strong></td>
<td><strong>5.3</strong></td>
<td><strong>5.2</strong></td>
<td><strong>5.1</strong></td>
</tr>
<tr>
<td><strong>New Borrowers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Argentina (1824)</td>
<td>7.0</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Brazil (1824)</td>
<td>n/a</td>
<td>5.9</td>
<td>6.1</td>
</tr>
<tr>
<td>Chile (1822)</td>
<td>8.0</td>
<td>7.0</td>
<td>7.4</td>
</tr>
<tr>
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<tr>
<td>Mexico (1824)</td>
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<td>6.6</td>
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<tr>
<td>Peru (1822)</td>
<td>10.1</td>
<td>7.3</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>Average Yield</strong></td>
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<td><strong>6.9</strong></td>
<td><strong>7.7</strong></td>
</tr>
<tr>
<td><strong>Difference in Yield</strong></td>
<td><strong>3.4</strong></td>
<td><strong>1.7</strong></td>
<td><strong>2.5</strong></td>
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<tr>
<td><strong>Standard Error</strong></td>
<td>0.6</td>
<td>0.4</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Source: Author’s calculations from *Course of the Exchange*, various issues. Data are not available for Brazil in 7/1824, since it did not borrow until October of that year.

I chose July 1824 as a starting date to maximize the number of borrowers in the sample. As the table shows, the young states did not raise debt simultaneously, but instead floated loans in a staggered fashion. Colombia, Chile and Peru borrowed in 1822, but Argentina, Brazil, Mexico and Greece waited until 1824. By delaying the start date until July 1824, I incorporated these four states into the sample. Setting the start date at July 1824 also increased the number of seasoned borrowers. Although Austria and Portugal had amassed records on the Amsterdam market, they did not borrow in London until late 1823, so quotations were not available for these states during the earliest phase of British lending.

The ending date, July 1825, was chosen to minimize the number of defaults. For many investors the lending boom of the 1820s ended with a discouraging bust, in which European and Latin American countries suspended payment on their foreign debts. The theory in Section 2 implies that new borrowers should pay a lemon premium, which should decline over time provided that the borrower repays, thereby signaling its reliability. The act of default, on the other hand, would throw the debtor into a lemon-like class from which it could emerge only by offering an acceptable settlement to creditors. Thus, a rigorous test of the seasoning hypothesis should compare the yields of new versus established borrowers that are not currently in default. By January 1826 several Latin American states had suspended payments, and investors began to anticipate arrears by others. To prevent these events from contaminating the test, I ended the sample in July 1825, before the rash of defaults took place.
The start and end dates do exclude a few countries, but their absence should not noticeably affect the results. In the category of new borrowers, the first omitted entry is Poyais, a fictitious state that nonetheless borrowed on the London market in 1822! Poyais does not appear in Table 3, because investors discovered the fraud in 1823 and ceased to trade the worthless paper. Nevertheless, will soon revisit the case of Poyais, which has interesting implications for our theory of reputation. The second excluded newcomer is the United Provinces of Central America, a confederation that included Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua. These Central American states floated their first bond in November 1825, after the sample period ended. Including them would not have changed the conclusions, however. Through the beginning of 1826 the yield on Central American bonds fluctuated between 9.0 and 10.9 percent, roughly in line with other new borrowers at the time and considerably higher than more seasoned states.

The start date also excludes one seasoned borrower, Spain, which defaulted in May 1824. One could make a strong case that Spain should be dropped anyway, on grounds that it was qualitatively different from other borrowers in the sample. In 1820 a military uprising toppled the regalist government and forced Ferdinand to accept the liberal constitution, which the Cortes of Cadiz had drafted in 1812. The revolt inaugurated a three-year period of constitutional rule in which Spain contracted two loans on the London market. Judging from the initial yields on these bonds (up to 17 percent at launch), it is clear that investors assigned a very high risk of default. The risk became reality in April 1823, when French intervention brought the Constitutional Triennium to a close and restored Ferdinand as absolute monarch. Upon resuming power, Ferdinand quickly annulled all the acts of the Cortes, including the debts contracted under the constitutional government. Bondholders greeted the news with alarm, which explains why the yields on Spanish bonds surged in 1823 and early 1824, well in advance of the missed payments. Given that bondholders anticipated the default long before it actually occurred, it would have made sense to exclude Spain, even if the start date were pushed earlier than July 1824.

At all three dates in Table 3, British investors required a lemon premium from new borrowers. The mean yield for newcomers always exceeded the mean for seasoned ones, sometimes by a considerable margin. For instance, in July 1825 bonds of the seasoned states were trading at 5.1 percent, on average, while the bonds of new entrants yielded 7.7 percent, leaving a gap of 2.5 percentage points. The yield differential fluctuated across the three dates, with the largest difference in July 1824 and the smallest in January 1825, but the general pattern is clear. Moreover, within any given column the minimum yield among the new borrowers always exceeded the maximum yield of a seasoned state, suggesting that the averages do not mask a high degree of variance. To verify this, the final row of the table reports the standard error around each difference in yield. The differences are at least three times larger than their standard errors, satisfying any reasonable test of statistical significance. Even with such a small sample, the probability that the observed differences arose purely by chance is less than 1 in 100.24

These patterns are consistent with more qualitative statements from the period. For instance, the London Times emphasized to investors that these were “new states” and that anyone

24 The 95% confidence intervals around the differences are 1.8 to 5.0 for July 1824, 0.9 to 2.6 for January 1825, and 0.6 to 4.4 for July 1825.
who bought South American bonds was doing so “at his own risk.” In 1828, after nearly all the new states had defaulted, bondholders convened to see what assistance they could obtain from British authorities. During the meeting, Alexander Baring, M.P., reminded the participants that investors had demanded “very high interest” rates from those new states, “it must have been pretty generally understood” that there was a “proportionate risk” of the loans going sour. As it turned out, all but one of the new borrowers disappointed investors by suspending payment of its foreign debts.

Particularly during the early years of the lending boom, investors found it extremely difficult to distinguish among Latin American states. Evidently, the credit history was a critical piece of information. States without such a record looked the same and were priced at low levels, reflecting the risk of dealing with a potential lemon. The inability to distinguish among Latin American countries was best illustrated by a loan to the fictitious Central American country of Poyais, which managed to borrow on the same terms as the legitimate states of Chile, Colombia, and Peru! Figure 3 depicts the yields on Poyaisian bonds (the 0’s), compared with a thin solid line that traces the average yields for the three genuine Latin American states that had borrowed around the same time. When investors discovered the fraud and certified Poyais as the sourest of all lemons, yields soared above 120% and trade in the worthless paper ceased. The story of Poyais is worth recounting, because illustrates how investors could lump unfamiliar borrowers into a single, undifferentiated category and charge them an identical lemon premium, just as theory predicts.

Figure 3: Yields on Poyaisian bonds compared with yields of Chile, Colombia, and Peru
London Market, 1822-1824

Source: Author’s calculations from end-of-week quotes in Course of the Exchange

Gregor MacGregor, a Scottish adventurer, devised the Poyaisian fraud during a trip to the Mosquito Coast, a 200-mile stretch along the Caribbean shore of modern-day Nicaragua. When MacGregor landed on the swampy littoral in 1820, he found several wandering tribes of

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26 *Morning Chronicle* (London), May 2, 1828 p. 3; and *Times* (London), May 2, 1828 p. 3.
Mosquito Indians that had once allied with Britain in wars against Spain. MacGregor befriended the Mosquito King, who – allegedly after many glasses of whiskey – granted the Scotsman a concession of 8 million acres along the Rio Tinto. The adventurer quickly returned to London and attempted to raise money for his imaginary country, which derived its name from the Poyer Indian tribe.

To excite interest in the new land, a book entitled *Sketch of the Mosquito Shore, including the Territory of Poyais* was published in Edinburgh in 1822. The author, who styled himself as “Captain of the First Native Poyer Regiment and Aide-de-Camp to His Highness Gregor, Cazique of Poyais,” offered a dazzling portrait of a fertile and hospitable land that was ripe for colonization. As it turned out, the sketch was a hoax, and many passages had been cribbed from descriptions of Jamaica and the West Indies. Far from the paradise that Strangeways described, Poyais was “a paltry town of huts and long houses.”

It took more than a year for news of the fiction to spread among British investors. In the meantime, MacGregor managed to raise 200,000 pounds sterling on the London market at 6 percent interest. His “Poyais Bond” was offered in October 1822 on an installment plan at 80 percent of par value (implying a yield of approximately 7.5 percent), with 15 pounds down and the balance due in January and February 1823. As Figure 3 shows, the yields on Poyaisian bonds quite closely paralleled those of legitimate Latin American states for at least six months. Evidently, investors treated Poyais like any other new-world country.

The fraud was exposed in August 1823, when reports from the first Poyaisian settlers reached London. In addition to issuing bonds, MacGregor had sold land grants to Scottish highlanders who dreamed of a new life in this “free and independent state, under the government of its own Cazique.” The first group of 70 would-be colonists sailed in January 1823 on the *Honduras Packet*, and another 170 followed a month later. Before departing, most surrendered their English and Scottish pound notes to agents of MacGregor in exchange for Poyaisian currency, which had been specially engraved for this purpose. When the settlers arrived, they found not the paradise described in advertisements, but four shacks and a hostile Indian tribe. Most contracted tropical diseases and began to die from fever or starvation.

When news of the scandal eventually reached Great Britain, prices of Poyaisian bonds plummeted. The *Times* decried the Poyais fraud, saying that the adventurer had “gulled” investors into buying a “sham security.” Exposed in Britain, MacGregor next fled to France, where he applied for a loan of 10,000 Francs in 1824. By then, “the credit of the Cazique had fallen on the Paris as well as on the London Exchange,” and the request for funds was denied. According to the *Times*, “every reader who can read” knew about the swindles perpetrated by His Highness Gregor I.

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27 Hashbrouck (1927), pp. 443-45.
29 The quote is from an advertisement in the *Sentinel* (Glasgow), July 22, 1822.
30 Gregg (1999).
31 *Times* (London), September 1, 1823, p. 2. See also August 25, p. 3 and August 26, pp. 2-3
32 *Times* (London), October 24, 1824, p. 2
The Poyaisian episode illustrates a classic market for lemons: under conditions of imperfect information, investors could not distinguish between genuine and imaginary countries, which were all charged a similarly high rate of interest. The account also reveals how bondholders updated their beliefs in response to disastrous news from settlers and futile attempts to redeem their interest coupons for cash. By August 1823, investors had obtained enough information to distinguish the bonds of Poyais from the securities of legitimate countries. The pooling equilibrium of October 1822 had become a separating equilibrium a year later.

The Poyaisian bonds were not the only securities to fall into default. With the notable exception of Brazil, every new borrower in Table 3 suspended payments of interest and principal during the late 1820s. Spain and the United Provinces of Central America, not listed in Table 3, also ceased to service their debts.

How did the market treat these defaulters? The theory in Section 2 implies that, until borrowers offer an acceptable settlement to creditors, rational investors will refuse to extend new loans. Events unfolded as we might expect. Figure 4 proves that countries that defaulted could not borrow anew until they had offered creditors an acceptable settlement. Each dot in the figure represents a new loan that the country contracted on the London market between 1820 and 1870. The horizontal lines, in contrast, mark the years in which the country was in default on its foreign debts. The lines end only when bondholders accepted the settlement. The striking lesson from this figure is that, with only one exception (Greece in 1833), countries simply could not float new bonds until they settled their previous defaults. The result stands in stark contrast with the notion, advanced by economic historians cited in the introduction to the paper, that creditors ignore history. On the contrary, they mind history in precisely the way that the theory in Section 2 predicts.
Only one country, Greece, presents a challenge to this pattern. Greece borrowed for the first time on the London market in 1824 and issued a second bond one year later. The last payment on these loans took place in January 1826, after which the government entered a phase of default that lasted for more than a half-century. During this protracted period of nonpayment, Greece raised an additional 60 million francs on the London market. The loan of 1833, which appears prominently in the middle of the Greek default line in Figure 4, appears puzzling until one considers the special circumstances that enabled the loan to transpire.

In 1827 England, France, and Russia intervened to assist Greece in its struggle for independence from Turkey. Having secured the autonomy of this new state, the protecting powers chose Prince Otto of Bavaria as the first king of modern Greece. By the terms on which Otto accepted the throne, the three powers agreed to guarantee a loan. Investors undoubtedly accepted the loan – which was not even quoted on the London stock exchange – not because they had developed a renewed faith in the creditworthiness of Greece, but because the loan came with the backing of three seasoned borrowers, all of whom had upheld their domestic and foreign obligations during the 1820s.

The loan prospectus not only mentioned the tri-power guarantee, but it also pledged “all the revenues of Greece” as security for the new debt. This feature of the contract sparked angry protests from existing bondholders, since those same revenues had been hypothecated for

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33 Levandis (1944).
payment of the bonds that were now in default. Holders of the 1824 and 1825 bonds voiced their complaints to Lord Palmerston, the British secretary of war, who sympathized with the injustice but argued that the establishment of a regular government in Greece would benefit all bondholders. Aggrieved creditors also appealed to Lord Aberdeen and the House of Lords, all to no avail. The foreign policy interests of Britain had trumped the interests of bondholders, allowing the flotation of a loan that would not have occurred under normal market conditions.34

What about the governments that paid? By keeping their promises, the seasoned borrowers in the top section of Table 3 confirmed their reputation for creditworthiness. Thomas Fortune wrote in the 1833 edition of his *Epitome of the Public Funds*, the leading investment handbook of the day, that Danish loans had “always enjoyed great favor with the public” on account of the “punctuality and straightforwardness which the government … has hitherto observed in all its financial dealings.” He expressed a similar view of the debts of Austria, France, Naples, Prussia, and Russia.35 For all these countries, the policy of consistent repayment during the 1820s reinforced what investors knew. Consequently, the risk premiums on seasoned borrowers declined only slightly from their levels in the 1820s.

In contrast, the risk premium associated with Brazilian debt dropped dramatically over the next thirty years. Among the new borrowers who paid lemon premiums in the early 1820s, only Brazil honored its debts to the last shilling. This behavior distinguished Brazil from the lemons, causing its risk premium to converge asymptotically toward the baseline rate for seasoned borrowers. Figure 5 displays the premium, defined as the spread over UK consolidated debt, from 1825 through 1890. The figure shows a consistent downward curve that bottomed-out at about 1.5 percentage points by the early 1850s. A few sharp spikes interrupted the progression, but they arose from easily identifiable events such as the abdication of the Portuguese emperor in 1831, the civil wars that raged from 1835 until 1845,36 the Revolt of the Confederation of the Equator in 1848-49, and the war with Paraguay from 1865 through 1870. Notwithstanding the spikes, Figure 5 shows the kind of asymptotic trajectory that we would expect from our theory of reputation.

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34 *Times* (London), August 24, 1832 p. 3. The loan of 1833 proved to be a costly commitment, not for the bondholders who extended the money, but for the guarantors that were incessantly called to make good on their pledge. Greece offered a few token payments, but in general it neglected not only the bonds of 1824 and 1825, but also on the tri-power loan of 1833. Finally, in exasperation, the Great powers repaid the principal in 1871.


36 Civil wars raged in Santa Catarina, Rio Grande do Sul, Pará, Maranhao, Minas Gerais and Sao Paulo, among others. The bloodiest conflict, the Cabanagem rebellion in Northern Brazil, left 30,000 dead.
What explains the downward trend? Market analysts attributed the fall in yields to a consistent policy of debt repayment. As early as 1833, the leading investment manual remarked that “there seems to be an anxiety” on the part of Brazilian leaders “to stand well with their creditors” in England. By 1841 the Times of London could count Brazilian debt “as one of the first foreign stocks in the market,” precisely because of “the punctuality which has hitherto been observed” in the payment of interest and principal.  

When the risk premium touched bottom in the 1850s, Brazilian debt traded at approximately the same rates as Belgian, French, and Russian securities. In his Epitome of the Public Funds, Fortune offered a convincing explanation: “throughout all its difficulties and embarrassments – and there were many and great – the Government punctually and honorably provided for the dividends as they became due, and at no period have its foreign creditors suffered in the smallest degree.” Fortune added that “the punctuality of the payment of dividends, and the disposition evinced to preserve the credit of the country” gave Brazilian debt a first-rate standing. The other leading bond manual, Fenn’s Compendium of the English and Foreign Funds, concurred: “the credit of the empire of Brazil has always been well maintained” and is now “inferior to no country in the London Money Market.” Thus, the leading investment analysts joined the popular press in saluting Brazil’s impressive record, and they attributed its low yields to a punctilious habit of repayment.

In summary, evidence from the early nineteenth century coheres with this paper’s theory of reputation. Just as in Amsterdam, new borrowers on the London market paid higher interest

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37 Fortune (1833), p. 132; Times (London), October 1, 1841, p. 5.
rates than more established debtors. Moreover, all new entrants – whether real or fictitious – paid the same lemon premium, at least during the first few years of lending. The within-group variation eventually increased, as additional news arrived from South America, but the higher within-group variance could not obscure a stark difference in means across the two types of borrowers. In time, the newcomers that honored their obligations experienced a significant reduction in rates, which occurred because they distinguished themselves from lemons. By contrast, the countries that suspended payments could not reborrow until they settled their defaults. Thus, we have seen that reputations formed in a remarkably consistent way, both in Amsterdam and in London, and they exerted powerful effects on the ability of states to borrow.

5. The London Market in the Late 19th Century

The next opportunity for an empirical test comes in the 1870s, when longtime defaulters resumed payments and returned to the market, and when several new states raised capital for the first time. To check for lemon premiums and seasoning effects, I calculated the yields of all sovereign bond issues that were quoted in London in January 1872. As in Section 4, the date was chosen to maximize the number of borrowers in the sample. Countries entered the market through the beginning of 1872, so shifting the sample even one year earlier would have excluded newcomers like Bolivia, Liberia and Paraguay. Moving the date any later would have contaminated the sample with defaults, which began in January 1873 when Honduras and San Domingo suspended payments. The choice of January 1872 seemed to strike an appropriate balance, since it incorporated all new borrowers and minimized the incidence of actual defaults.

For this analysis, I sorted the debtors into 4 groups. The first group included the seasoned payers, who had been borrowing and repaying faithfully in London for at least ten years and in most cases for a half century. Some of these countries had also proven themselves on the Amsterdam market. The second group contained countries that had settled their defaults from the 1820s and then issued new debt, a pattern that was depicted in Figure 4. The third category was reserved for new borrowers, those that tapped global capital markets for the first time in the decade prior to 1872. Finally, I identified the proven lemons: those countries that defaulted in the 1860s or even earlier, when external conditions did not warrant a lapse of payment, and who continually refused to make amends with creditors. In total the sample contained thirty countries, most classified as seasoned, settled, or new. The results appear in Table 4.
Table 4: Bond Yields of Four Types of Borrowers
London Market, 1872

(dates in parentheses indicate when new borrowers issued their first bonds)

<table>
<thead>
<tr>
<th>Seasoned Payers</th>
<th>Yield in 1872</th>
<th>Default in 1870s?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>4.4</td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>5.2</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
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<td>Italy</td>
<td>5.3</td>
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<tr>
<td>Netherlands</td>
<td>4.4</td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td>5.4</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>8.8</td>
<td>1876</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>5.5</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Settled &amp; Repaid</th>
<th>Yield in 1872</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>6.3</td>
<td>1873</td>
</tr>
<tr>
<td>Chile</td>
<td>5.9</td>
<td></td>
</tr>
<tr>
<td>Colombia</td>
<td>8.3</td>
<td>1873</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>7.9</td>
<td>1874</td>
</tr>
<tr>
<td>Guatemala</td>
<td>8.7</td>
<td>1875</td>
</tr>
<tr>
<td>Honduras</td>
<td>12.7</td>
<td>1873</td>
</tr>
<tr>
<td>Peru</td>
<td>5.2</td>
<td>1876</td>
</tr>
<tr>
<td>Portugal</td>
<td>7.8</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>9.4</td>
<td>1872</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>8.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>New Borrowers</th>
<th>Yield in 1872</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia (1872)</td>
<td>9.0</td>
<td>1875</td>
</tr>
<tr>
<td>Egypt (1862)</td>
<td>7.4</td>
<td>1876</td>
</tr>
<tr>
<td>Japan (1870)</td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>Liberia (1871)</td>
<td>8.2</td>
<td>1874</td>
</tr>
<tr>
<td>Paraguay (1871)</td>
<td>9.6</td>
<td>1874</td>
</tr>
<tr>
<td>Roumania (1864)</td>
<td>7.8</td>
<td>1876</td>
</tr>
<tr>
<td>San Domingo (1869)</td>
<td>10.7</td>
<td>1873</td>
</tr>
<tr>
<td>Uruguay (1864)</td>
<td>8.0</td>
<td>1876</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>8.6</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Proven Lemons</th>
<th>Yield</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecuador</td>
<td>12.5</td>
<td>since 1868</td>
</tr>
<tr>
<td>Greece</td>
<td>40.0</td>
<td>since 1827</td>
</tr>
<tr>
<td>Mexico</td>
<td>20.0</td>
<td>since 1866</td>
</tr>
<tr>
<td>Venezuela</td>
<td>35.3</td>
<td>since 1864</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>26.9</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Author’s calculations from the *Economist*, January 1872

The first numeric column gives the yield for each country, based on data that were published in the *Economist*. As expected, there was a progressive increase in yields from seasoned borrowers (5.5 percent on average) to settlers (8.0 percent) and new borrowers (8.6 percent). Investors apparently had written-off the lemons, which occupied the bottom of the list. The average yield of nearly 27 percent implied that, in the minds of British bondholders, the probability of repayment was extremely small.

39 Values in the table represent yields for the most representative bond of each country. Bonds with foreign guarantees and exceptional collateral were eliminated from consideration, since the yields did not reflect the true creditworthiness of the borrower. A list of these bonds will be posted on my website.
Would the differences in Table 4 pass a statistical test of significance? The difference in means between seasoned and new borrowers was 3.1 percentage points. The 95-percent confidence interval around this estimate stretches from 1.8 to 4.4 points, well to the right of zero, so we can be quite sure that the difference was not an artifact of this random sample. Likewise, rates were substantially lower for seasoned payers than for states that had settled past defaults. The gap in yields was 2.5 percentage points, on average, with a 95-percent credible range from 0.7 to 4.4 percentage points. Based on the information in Table 4, it is somewhat more difficult to distinguish the settlers from new borrowers: although newcomers got charged higher rates, the half-point gap could have arisen by chance alone. Lemons, not surprisingly, stood in a class by themselves, both substantively and statistically.

Readers might object that the foregoing analysis does not control for standard economic variables that might affect the yield and co-vary with the four categories. In Sections 3 and 4 it would not have been possible or even appropriate to include economic controls, because such data did not exist for investors in the 1700s or the 1820s. The situation began to change in the mid-nineteenth century, when bond manuals started publishing tables that summarized the economic conditions of all major borrowers. An early attempt by Fenn (1860) provides the population, revenue, debt, and trade statistics for the principal states and colonies, all converted into British pounds. “No such return, that can at all be relied upon” existed prior to 1860, Fenn wrote, and he hoped that his novel compilation would serve investors well. It is conceivable that investors incorporated such information into their portfolio decisions during the 1860s and 70s.

Which variables, if omitted, could bias the analysis? One obvious candidate is the stock of external debt, either by itself or – more likely – relative to the exports that were necessary to raise foreign exchange for repayment. Other factors equal, a larger debt/export ratio (hereafter called the debt ratio) should increase the probability of default and result in higher yields. Furthermore, the debt ratio should be correlated with seasoning: established borrowers presumably had larger debts than new entrants, and therefore a larger debt ratio for any given level of trade. If nineteenth-century investors factored this variable into their decisions, as modern securities traders do, then its omission from the statistical analysis would bias the results. Fortunately, the bias would be conservative, since the rising stock of debt would counterbalance the seasoning effects. Thus, omitting the debt ratio might cause us to understate the effect of seasoning on the yield. Controlling for the debt ratio should widen, not narrow, the gap between seasoned and new borrowers.

The second potential spoiler is wealth. A cursory look at Table 4 suggests that seasoned borrowers were probably wealthier, on average, than other countries in the sample, and therefore more capable of servicing their foreign debts. Some underdeveloped economies, including Brazil, Russia, and Turkey, appear on the list of proven borrowers, but they sit alongside the world’s wealthiest states, such as Belgium, Denmark, France, and Holland. The average wealth of new borrowers was undoubtedly lower. To some extent, this discrepancy in wealth may have arisen through seasoning. Due to their prompt repayment, countries at the top of the list enjoyed privileged access to international capital flows that were necessary for economic growth. If wealth was endogenous in this way, then controlling for it could lead us to underestimate the true

Fenn (1860), pp. vii-viii.
impact of seasoning on yields. Nevertheless, a certain component of wealth was exogenous and correlated with our four categories. In the regression analysis that follows, I treat all wealth as exogenous, even though this approach stacks the deck against the seasoning hypothesis.

Unfortunately for investors, direct measurements of wealth simply did not exist during the 1870s. Even now, after more than a century of archival research, scholars have managed to develop retrospective estimates of wealth and income for only a handful of European and Latin American countries. For the regressions, I adopt the same proxy that investors probably used in the late nineteenth century: the value of exports per capita. According to the leading investment manual of the time, “there is, perhaps, no better available test of a nation’s wealth than its foreign trade, for, as a rule, countries which are rich have those things which other nations covet, and countries which are poor have not.”

The manual proceeded to compare countries according to the value of their exports, standardized by population. Modern scholarship confirms the utility of this yardstick. For instance, Victor Bulmer-Thomas has shown that a single variable, exports per head, explained more than 80 percent of the variation in real GDP per capita among Latin American states on the eve of World War I. Thus, the quantitative intuitions of investors in the 1800s were demonstrably accurate.

Data for the two economic variables were culled from statistical compilations by Fenn (1873) and Baxter (1771), supplemented where necessary from the Statesman’s Yearbook and various publications of the UK Board of Trade. In a few cases it was impossible to find economic variables, so the missing data were multiply imputed. As suspected, exports per capita covaried strongly across the groups. The average for seasoned borrowers was 4.2 pounds, much higher than for settlers (2.5 pounds), new borrowers (1.7 pounds), or proven lemons (1 pound). The debt ratio also varied across groups, though not exactly as anticipated. The highest debt ratio belonged to the settlers (7.6 pounds), compared with 4.8 pounds for seasoned borrowers and 4.7 pounds for lemons. New borrowers, who had not yet accumulated large debts, brought up the rear with a ratio of 2.5 pounds.

I regressed the natural logarithm of the yields in Table 4 on the level of exports per person, the ratio of debt to exports, and dummy variables for each of the four categories of borrowers. The equation appears below, where the subscript $i$ indexes the country.

$$\ln(yield) = \beta_0\text{SEASONED}_i + \beta_1\text{SETTLED}_i + \beta_2\text{NEW}_i + \beta_3\text{LEMON}_i + \beta_4 \frac{\text{exports}_i}{\text{population}_i} + \beta_5 \frac{\text{debt}_i}{\text{exports}_i} + \epsilon_i$$

Regression results appear in Table 5. The first column pertains to the full sample of 30 countries, and the second is a restricted sample that excludes the four lemons. In both samples, economic variables exerted the expected effect on the dependent variable. Other things equal,

41 As a general rule, one should not control for the consequence of the key explanatory variable of interest.
42 Fenn (1883), p. xviii.
44 Trade data were missing for three of the thirty countries, making it impossible to construct ratios of exports/population and debt/exports. I imputed the ratios via the EMis algorithm (expectation-maximization with importance sampling) that was developed by King, et. al (2001) and implemented in software called Amelia for Gauss (Honaker, et al 2001). I imputed 5 imputed datasets, which were identical for all observed data and differed only in the imputations of economic variables for the three countries that did not report trade statistics.
yields declined with wealth – as proxied by exports per person – and increased with the debt ratio.\textsuperscript{45} The coefficients on both variables were estimated with a high degree of precision, with t-statistics ranging from 1.7 to 2.6, so it is safe to conclude that investors incorporated these variables into their portfolio decisions. The potency of the economic variables increased when we dropped lemons from the sample, perhaps because standard ratios are less relevant for countries that repeatedly refuse to pay.

Table 5: Regression Analysis of Yields, Controlling for Economic Conditions
London Market, 1872

<table>
<thead>
<tr>
<th>Sample with Lemons (N=30)</th>
<th>Sample without Lemons (N=26)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>estimated</td>
</tr>
<tr>
<td>Exports per Person</td>
<td>-1.27</td>
</tr>
<tr>
<td>Debt/Export Ratio</td>
<td>2.06</td>
</tr>
<tr>
<td>Seasoned</td>
<td>1.63</td>
</tr>
<tr>
<td>Settled</td>
<td>1.92</td>
</tr>
<tr>
<td>New Debtor</td>
<td>2.11</td>
</tr>
<tr>
<td>Lemon</td>
<td>3.11</td>
</tr>
</tbody>
</table>

The most important conclusion from Table 5, however, is that seasoning effects persisted despite the introduction of control variables. The coefficients on the dummy variables climb in stepwise fashion from seasoned debtors to settlers, new entrants, and lemons. Moreover, the standard errors are remarkably small for a sample of this size, allowing great confidence in the conclusions that we drew less formally from Table 4.

The dependent variable was measured in the natural log metric, which can be difficult to interpret. For additional insight I use stochastic simulation to convert the estimates from Table 5 into a scale that is more comprehensible.\textsuperscript{46} Specifically, I set the two economic control variables equal to their sample means, and then used monte-carlo techniques to approximate the sampling distribution of the expected yield for each type of debtor. All interpretations were based on the regression that excludes lemons, thereby giving the maximum possible weight to the control variables.

Figure 6 summarizes the results. The central dot in each boxplot gives our best estimate of the yield for seasoned, settled and new borrowers, after stripping-out the effect of economic variables. The central squares define the interquartile ranges (25\textsuperscript{th} through 75\textsuperscript{th} Percentiles), and the wingspans mark the 95 percent confidence intervals. The figure shows that, with tremendous confidence, we can affirm a difference between seasoned and new borrowers. The point estimates for these two categories are 5.6 versus 9.0 percent, and the sampling distributions do not overlap. It is a bit harder to distinguish the states that settled from either the seasoned

\textsuperscript{45} For ease of presentation, both economic variables were recalibrated in \textit{hundreds} of pounds per person, such that averages for the full sample were 0.026 and 0.050, respectively.

\textsuperscript{46} Procedure is described in King, Tomz and Wittenberg (2000) and was implemented with Clarify software developed by Tomz, Wittenberg and King (2001).
borrowers or the newcomers. Although the point estimate for the yield falls smartly in the middle, at 7.4 percent, the confidence intervals stretch far in both directions, reflecting considerable diversity in this class of borrowers. Some, who had settled and repayed for a long time, began to look more like seasoned borrowers, while others, who had only recently settled and launched new bonds, more closely resembled the newcomers. Overall, the results are quite consistent with the theory in Section 2.

Figure 6: Expected Yields, Controlling for Economic Variables
London Market, 1872

We can gain further insight by probing more deeply into the various subcategories of Table 4. Consider the seasoned borrowers. We have already seen how Brazil managed to lower its yield through a consistent record of repayment. Table 4 places the yield on Brazilian bonds in the middle of the pack, higher than longstanding borrowers like Denmark and Sweden but lower than Italy or Russia. The position of Brazil is striking, given that its income per capita at that moment was almost surely lower than settlers like Argentina, Portugal and Spain, and on par with countries like Japan (a new borrower) and Mexico (a lemon). As we have seen, Brazil earned its position as a first-rate borrower through a consistent pattern of repayment, from which it never deviated until the mid 1890s.

Two countries in the seasoned category, Turkey and France, had above-average yields. Both deserve some comment. Though seasoned by my coding criteria, Turkey had been borrowing only since 1854 and was thus the newest of the proven borrowers. Moreover, as many bond manuals and newspaper reports acknowledged, the country was experiencing severe

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47 These conclusions are based on retrospective calculations of GDP per capita at purchasing power parity in 1870, as reported in Maddison (1995).
financial trouble due to a bloated foreign debt and a debt-export ratio of more than 13 pounds, one of the highest in the sample and 2.8 times the seasoned-country average. In an age where economic information was increasingly available to investors, we would expect news of financial trouble to elevate the yields on Turkish bonds, thereby introducing “noise” into the otherwise low-variance category of seasoned borrowers.

The French yields in Table 4 are also high, but one should put them in proper context. During the early 1870s France suffered a humiliating defeat in the Franco-Prussian war, and it was beset by domestic turmoil that eventually led to the imposition of martial law. Given such an inauspicious backdrop, it is quite remarkable that French bonds yielded only 6 percent, and that the government was able to raise several new loans on the London market. One such issue was the “National Defense” loan, a 10 million pound credit underwritten by J. S. Morgan & Co in late October 1870. In an interview with George Smalley, London correspondent of the New York Tribune, Junius Morgan explained why he took the loan. The rationale is worth quoting at length, because it shows why bankers and investors placed their faith in seasoned borrowers.

“When it first occurred to me that something might be done, I looked up the financial history of France. I found that since 1789 there had been a dozen separate governments – Monarchy, First Republic, Directory, Consulate, Empire, the Bourbons again, then the Orleanists, then the Second Republic, followed by the Second (or third Empire), and so on. Between these successive governments there were enmities of many kinds: dynastic, personal, political. Each successor, with one exception, hated its predecessor. It was one long civil war. But I found this also. Not one of these governments had ever repudiated or questioned the validity of any financial obligation contracted by any other. The continuing financial solidarity of France was unbroken. It was plainly a policy rooted in the minds of the people and of the governing forces of France. I saw no reason why it should be broken in this case more than in any other; less, perhaps, than in many others since this money was wanted for the defense of the country. That was good enough for me. There was no gamble. I thought it was a safe operation, as it turned out to be.”

Next consider the subcategory of settlers. Members of that group not only made amends with creditors, but also issued new debt and serviced it regularly over a number of years, thereby separating themselves from lemons. Within this class of borrowers, countries that settled relatively quickly should have commanded lower rates than those that remained in default from the 1820s through the late 1860s. Moreover, countries with the longest record of uninterrupted payment on post-settlement bonds should have gotten preferential treatment, as they approached the ideal of a seasoned borrower. To test these hypotheses, I regressed the simple yield on two explanatory variables: the number of years since settlement, and the number of years without default on post-settlement bond.

The results appear in Table 6. For ease of interpretation, I expressed the dependent variable in percentage points, even though estimates on the log metric would have had slightly higher t-statistics. The table shows that, other factors equal, the cost of delaying a settlement by ten years was about 1.1 percentage points, while an additional decade of full payment on post-settlement bonds reduced the yield by about 1.9 points, a remarkably rapid rate of convergence.

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As before, standard errors around these estimates are miniscule, and should therefore give us confidence in the predictions of our theory. Moreover, the two key variables account in Table 6 explain almost 78 percent of the variation in yield, once more showing that investors attached an overriding importance to the credit history of the borrower.

<table>
<thead>
<tr>
<th></th>
<th>estimated coefficient</th>
<th>standard error</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years since settlement</td>
<td>-0.11</td>
<td>0.04</td>
<td>2.6</td>
</tr>
<tr>
<td>Years without default on new bonds</td>
<td>-0.19</td>
<td>0.04</td>
<td>5.4</td>
</tr>
<tr>
<td>Constant</td>
<td>11.35</td>
<td>1.32</td>
<td>8.6</td>
</tr>
</tbody>
</table>

Finally, consider the category of new borrowers. Throughout this paper I have coded new borrowers as countries with a credit history of less than ten years. If the seasoning hypothesis is correct, however, we should expect the most experienced borrowers within this group to boast lower yields than the true novices. To investigate this possibility, I regressed the yields of new borrowers on their years of experience. Given a sample of only eight borrowers, the results in Table 7 are quite consistent with theory. Each additional year of experience cut the yield by 16 basis points, on average. The point estimate is more than three times its standard error, allowing us to conclude that investors discriminated even within the category of new borrowers, based on the length of uninterrupted debt service.

<table>
<thead>
<tr>
<th></th>
<th>estimated coefficient</th>
<th>standard error</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of experience</td>
<td>-0.16</td>
<td>0.05</td>
<td>3.2</td>
</tr>
<tr>
<td>Constant</td>
<td>9.24</td>
<td>0.53</td>
<td>17.4</td>
</tr>
</tbody>
</table>

Among the new borrowers, only Japan maintained full payment throughout the 1870s. Santo Domingo was the first to fall, in January 1873. Liberia and Paraguay suspended payments a year later, Bolivia stopped servicing its debts in 1875, and Egypt, Roumania, and Uruguay defaulted in 1876. How did markets treat the only newcomer that kept faith with its creditors? I conclude this section by investigating the experience of Japan, which – like Brazil a half-century earlier – amassed a perfect credit record and eventually joined the ranks of seasoned borrowers.

In the early seventeenth century the central administration of Japan introduced a policy of seclusion (sakoku). The Shogun made it illegal on pain of death for any Japanese ship or person to leave the country, and he also prohibited foreigners from visiting Japanese ports. Exceptions to this rule were limited to a few Chinese junks coming to Nagasaki and to a Dutch trading post that was confined to the island of Dejima. Dutch merchants traveled within Japan under escort, and only for approved purposes. Not surprisingly, Japan did not borrow on international markets during this period. The policy of extreme isolation lasted until the mid-19th century, when Commodore Perry began to pry open the Japanese market.
The major turning point came in 1868, with the fall of the House of Tokugawa and the restoration of the emperor. The new leaders chose the name Meiji, meaning enlightened rule, and began to pursue contact with the west. Two years later, Japan floated its first loan on the London market: a 1 million pound credit, to be redeemed gradually over thirteen years. With a nominal interest rate of 9 percent and an issue price of 98 percent, the yield at launch was nearly 9.2 percent, remarkably high in comparison to the seasoned borrowers of the time.

Investors demanded this enormous yield because Japan had not yet proven its creditworthiness through years of faithful repayment. The Economist magazine provided the rationale: “Do we know what all the various bodies and persons having power in that polity may think of paying money to foreigners? … Are we sure that this new nation can be trusted with the greatest of pecuniary temptations – that of borrowing from persons they have never seen?” The magazine professed “ignorance of the people and Government, and of their political character” and noted that “we could only learn by the experience of years whether … their civilization is advanced enough and their political character trustworthy enough to permit of our lending to them safely.”

Over time Japan did satisfy its critics, and the risk premium fell in response. Figure 7 plots the yield on Japanese bonds, minus the risk-free UK consol rate, from 1870 until the beginning of World War I. The parabolic downward trend is unmistakable. From a high of more than 9 percent at the onset of the regime, the spread fell to around 3 percent in 1890. After a temporary rise in the 1890s (spurred in part by military insecurity and the Sino-Japanese War), it plunged dramatically with the adoption of the gold standard, which some authors have called a “good housekeeping seal of approval.” This kind of reputational spillover, in which behavior on one issue affects reputation in another, deserves further investigation. Overall, though, a scrupulous policy of repayment allowed Japan to lower its yields when other countries in its borrowing cohort, having defaulted on their debts, were shut out of capital markets. As in the eighteenth and early nineteenth centuries, the evidence from this period accords quite closely with our theory of reputation.

49 Economist (London), April 30, 1870 p. 530 and January 18, 1873 p. 61.
50 Sussman and Yafeh (2000).
6. Conclusion

In this paper, I have shown how reputations formed across two centuries of international financial history. Consistent with the Bayesian logic in Section 2, new borrowers were charged a lemon premium, which declined asymptotically toward a baseline rate in response to a policy of faithful repayment. Governments that fell into default, on the other hand, could not raise additional capital on international markets until they offered an acceptable settlement to creditors. Support for these propositions comes not only from quantitative data, but also from commentary in the popular press and leading investment manuals of the time.

The findings of this paper should come as a relief to some readers, who were wondering how the contradiction between theory and evidence could have persisted in the international relations literature. According to the conventional empirical wisdom, reputations do not play an important role in global affairs. On its face this conclusion is difficult to accept, since it clashes so strongly with our interpersonal experiences (reputations matter in personal relationships) and with our intuitions about world politics. This paper brings theory and data back into alignment. Once we embrace a more sophisticated theory of reputation, one founded on rational theories of learning, and test it against fine-grained data from capital markets, it becomes possible to resolve the paradox. At least in the realm of international finance, reputations have formed in a Bayesian way for centuries, and they have profoundly influenced the flow of capital around the globe.

The results suggest, among other things, a need to revise existing theories of international debt. Many authors in this field tend to dismiss the role of reputation and imperfect information. Some write that the assumption of complete information “accurately reflects reality,” in the sense
that debtors and creditors know, with a high degree of precision, the preferences and abilities of the actors they are facing.\textsuperscript{51} According to one prominent scholar, the notion of incomplete information about the debtor is “totally implausible.”\textsuperscript{52} Other authors maintain that uncertainty about the borrower is “not necessary” to account for relations between debtors and creditors.\textsuperscript{53} In the interests of parsimony these authors delete what seems superfluous. Still others suggest that the assumption of incomplete information is “unlikely to yield empirically testable models,” whereas full-information approaches can be evaluated against evidence.\textsuperscript{54}

These concerns are understandable but misplaced. As we have seen, the assumption of incomplete information about the debtor is not only plausible but also necessary to explain the lemon premiums, seasoning effects, and other patterns of behavior that have existed for centuries. Moreover, contrary to the belief that theories of imperfect information are empirically intractable, researchers actually can use evidence to evaluate the predictions of a Bayesian approach to reputation, as the battery of empirical tests in this paper amply demonstrates. One simply cannot understand international capital flows and debtor-creditor relations without putting imperfect information and reputation at the center of the analysis.

The theory in this paper could be extended beyond debt to a variety of settings in international politics. In trade agreements, foreign direct investment, military alliances, and other forms of international commitment, interlocutors should treat newcomers quite differently from seasoned partners who have shown their reliability (or unreliability!) over a number of years. When dealing with an unfamiliar partner, policymakers may demand more safeguards, enter into shallower agreements initially, and generally to float “trial balloons” that, if successful, could lead to more comprehensive cooperation later on. The way a country behaves in future iterations will depend on how reputations evolve in response to surprising or unsurprising behavior in a Bayesian sense. This nuanced way of thinking about reputation could help bridge the gap between intuition and evidence, not only in debt but across a range of topics in international affairs.

\textsuperscript{51} Aggarwal (1996), pp. 55-57, 544.
\textsuperscript{52} Buiter (1988), p. 613.
\textsuperscript{53} Kletzer and Wright (2000).
\textsuperscript{54} Kletzer (1988), p. 602. This insistence on complete information appears most prominently in the work of political scientist Vinod Aggarwal, who has published the leading study of strategic interaction in international debt rescheduling. To predict the outcome of debt rescheduling, Aggarwal develops a “situational theory of bargaining” that focuses on the domestic and international constraints that borrowers and lenders face in the wake of a default. The model rests on the assumption that “each player knows both players’ payoffs and the rules of the game.” According to Aggarwal, this “assumption of complete information not only provides a more tractable model, but also more accurately reflects reality.” Models of imperfect information, in contrast, would be “unwieldy” for empirical work (Aggarwal 1996, p. 544, 70).
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