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The End of Gatekeeping: Underwriters and the Quality of Sovereign Bond Markets, 1815–2007

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> Wow. I hadn't thought of it through a historical perspective.
> (John Grisham, *The Partner* [1997])

In the past 20 years, dedicated research efforts have helped us expand our knowledge of how the international financial system operates. Because the emergence of global finance is really a reemergence, much of this research has been devoted to understanding previous regimes and experiences in relation to modern ones. Although matters are hardly settled and controversy is vibrant, there is at least now a body of literature to which we can turn. We know much more about the record of international debt than we did 30 years ago. In particular, we have acquired knowledge on how previous bondholders have fared (Eichengreen and Portes 1986; Lindert and Morton 1989); the incidence of collective action institutions on recovery rates (Eichengreen and Portes 1989); debt crises and the volatility of bond prices (Bordo et al. 2001; Mauro, Sussman, and Yafeh 2006); contagion in the long run;[1] and the factors that affect a country's reputation (Flandreau 2003; Tomz 2007).[2] We have also acquired knowledge on the historical determinants of sovereign bond prices in secondary markets[3] and on the historical effects of exchange rate regimes on credibility (or lack thereof).[4] Finally, we have acquired statistical knowledge on the long-run evolution of government debt.[5]

One area has been relatively underresearched: the microeconomics of foreign currency sovereign debt issuance. Macroeconomists recognize that the workings of primary international capital markets are important because these markets provide countries with access to external funding.[6] Yet the nuts and bolts of their operation are usually neglected, save the occasional outburst of interest in a special feature of possible relevance to policy. A prominent example is earlier research on the causes and consequences of the "original sin" phenomenon.[7] The relevance of

some more arcane aspects of debt issuance has also been acknowledged; we have in mind studies on the effect of certain covenants (e.g., collective action clauses) on bond prices.[8]

This paper is the first to take up the issue of the operation of primary markets over the long run. We identify an intriguing result. Using new data on several episodes of foreign currency sovereign debt issues in leading capital markets and then arranging the output by underwriter, we find that defaults are today randomly distributed across underwriters. But they were not randomly distributed in the past, and this is what we call the *default puzzle*.

Resolving the default puzzle requires that we discuss insights from banking theory. Our interpretation hinges on the effects of "brand" or "charter" value on intermediaries' risk taking. In the past era (by which we mean the long-run period that began in the early nineteenth century and ended with the interwar crisis), underwriters provided valuable certification services. They tried to secure prestige by convincing investors that their name was associated with safer products. They did this not for the sake of honesty, altruism, or self-esteem but rather because doing so entailed benefits. Today is different: underwriters have shed their role as certifiers and have outsourced it to rating agencies. The resulting reduction in liability risk also means that more competitive banks are prepared to issue riskier securities. We suggest that this new situation has given birth to a market for lemons, a market that did not exist in the past. We conclude that the next sovereign debt tsunami will crash on a foreign currency debt market that is *by design* more accident prone than its predecessors. Whether we will have adequate tools to handle the disaster remains to be seen.

In support of these claims we marshal a large amount of new data. In contrast to many important and ambitious previous works, we draw not only on published sources but on archives as well, and we have also performed interviews. This reliance on primary evidence (archives and interviews) is essential given the sometimes secretive nature of the business under study. As a result, this paper is the first to deal with the operation of primary markets for foreign government debt over such a long time span. With the help of this new evidence, we are able to test our central argument through a number of its implications. Among our findings, we report a change in the degree of concentration in the underwriting business (highly concentrated in the past, much less so now), in the underwriting services provided (encompassing in the past, much more limited now), on the fees collected (large and increasing with risks in the past, small and unresponsive to bond spreads now), on the quality standards

applied by market leaders (high in the past, low now), on the cooperation between underwriters and borrowers (strong in the past, limited today), and finally on the quality outlook of the products brought to the market (the past did not have a large market for products below the investment grade threshold, the present does).

The balance of the paper is organized as follows. Section I presents the data, the default puzzle, and a sketch of the argument; the rest of the sections provide various tests of our theory. Section II discusses measures of market concentration. Section III provides evidence on underwriting patterns and fees levied. Section IV discusses the relation between underwriters' brand value and risk taking. Section V provides evidence on the link between underwriting and contagion, and Section VI explores the link between banker turnover and reputation. Section VII shows that the modern period has been characterized by the emergence of riskier debt, and Section VIII discusses the reasons for the regime change in the modern era. We end with conclusions in Section IX.

I.   The Default Puzzle

A.   Background and Data

In the nineteenth century, lending to foreign governments occurred through the agency of originating houses located in the leading financial markets of the time. Because these houses had subsidiaries or partners in various cities, the diffuse nature of origination was a characteristic feature of the business. London was the leader in that it was home to a large number of underwriters and issues, but Paris emerged as a serious competitor in the late nineteenth century.[9] During the interwar period, the center of the world financial system shifted partly to New York, and government securities followed.[10] After an extended period of suspension—coinciding with the period between the interwar bonded debt collapse and the banking debt debacle of the early 1980s—the loan origination market has been reinvented along lines that seem to be broadly similar.[11] This prospering modern market relies on international securities originated and distributed by investment banks. The emerging markets crises of the 1990s and their boom during the period 2002–7 have been its latest vicissitudes. An open question at the time we are writing is the resilience of foreign country debt in the wake of the subprime crisis, global recession, and high credit default swap (CDS) premia.

In this paper we examine foreign government debt issued in leading financial centers in the past 200 years. Our database comprises issues

of foreign governments' debts since the beginning of the nineteenth century. We look at the markets in London (1818–1914), Paris (1882–1914), and New York (1920–30). We also look at the foreign government debt of "emerging" and "transition" countries that has been placed abroad during the present era (i.e., 1993–2007). Our data are not a series of samples but rather, as far as possible, the documented population of issues.[12] The historical material is constructed from listings of securities issued in the relevant markets and checked against lists found in bank archives and periodicals. The modern material includes the population of issues that form the background for the league tables published by Bloomberg.[13]

One issue that arises is the comparability of emerging and transition governments over time. Previous research has generally brushed this issue aside, considering nineteenth-century borrowers such as Denmark, Sweden, or Canada to be suitable counterparts to modern emerging countries.[14] Such an assumption may well be questioned (Accominotti et al. 2010). Because colonies were actually subsovereign entities, they have been excluded from this study. We focus on sovereign borrowing by emerging and transition countries *now* and on sovereign borrowing in foreign currency *then*. On the other hand, strict comparability would likely have required us to add countries that are more well behaved to the modern data set.

Our logic is market based, not fundamentals based (the latter would be quite impossible to implement). In other words, we compare markets with each other. First of all, to the extent that producers of league tables and market participants describe the debt of emerging and transition countries as forming a market, it is natural to try to match it against historical counterparts. Previous periods did not recognize such differences and looked at the foreign currency government bond markets as a whole; in fact, those markets did contain predominantly the securities of countries without a large domestic market. Second, we noted a fair amount of continuity in the identity of the countries involved in various episodes (Russia in the nineteenth century and today is an example that comes to mind). Finally, we strongly believe that our basic findings would be robust to the inclusion in the modern group of safer borrowers, because our key point is about transformations in the high-risk group, not in the low-risk group.

The chronology that we identify does capture the six successive waves of sovereign debt issues that have taken place since the 1820s. Historians have shown that the first five waves were terminated in more or less abrupt ways: those in the early nineteenth century (1818–29), the mid-nineteenth century (1845–76), the 1880s (1877–95), the pre–World War I period (sometimes inappropriately called the "first era of globalization"), the 1920s (1920–30), and finally the modern era (1993–2007). Three of

these waves (the 1820s, the mid-nineteenth century, and the interwar period) were terminated by massive failures, so they will receive more detailed attention. In the rest of the paper these periods will be referred to either in terms of the time spans just described or in shorthand as (respectively) "early nineteenth," "mid-nineteenth," "1880s," "pre–World War I," "interwar," and "now."

B.   The Puzzle

Defaulting countries are usually studied from the point of view of their characteristics or fundamentals, and accordingly an exciting literature has sought to relate default probabilities to countries' performance.[15] Previous authors identified defaulting patterns and coined the expression "serial defaulters" to designate recidivists (Reinhart and Rogoff 2004). Here we suggest taking a different look. We bring a new dimension to the study and suggest examining defaults on the basis of underwriter identity. The importance of common lenders has been recognized in previous studies of contagion, which emphasized commonality of lending centers as a possible propagation mechanism. We bring the topic to a finer level and explore the relation between borrowers and underwriters.[16] Our first question is to ask whether defaults across underwriters can be described as being generated from a random draw or whether, instead, underwriters do (or did) specialize in certain kinds of securities.[17]

   For this purpose we compare the distribution of defaults per underwriter during the modern era and earlier periods. A formal criterion that is chi-square based is Cramér's V statistic (Kendall and Stuart 1979). We computed this statistic for three selected episodes of major sovereign debt distress (the 1820s, 1870s, and 1920s) as well as for today;[18] the output is presented in figure 1. We see that formerly there was a clustering of defaults about certain intermediaries (in the past, defaults were not random) but that this is no longer true today (defaults are now randomly distributed).[19] This intriguing result means that the identity of underwriters once provided information on the likelihood of future defaults but no longer does so. This is the default puzzle.

C.   Suggested Resolution

Can we make sense of this puzzle? The argument we put forward builds on theoretical insights from banking and finance theory but also extends ideas first articulated in Flandreau and Flores (2009). The argument has parallels to the classic paper by Diamond (1989) on the importance of repeat play in
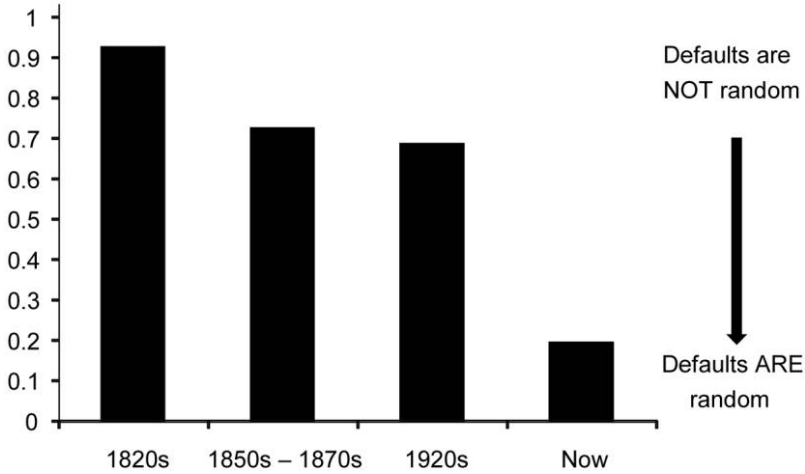
Fig. 1.   Cramér's *V*: are defaults randomly distributed across underwriters? Source: Authors' computations.

sustaining credibility. Because repeat play alone cannot sustain sovereign debt, Flandreau and Flores additionally incorporate underwriters' monopoly power. The intuition is related to that in the paper by Chemmanur and Fulghieri (1994), who develop a relevant model in which the financial intermediary's reputation for veracity mitigates the moral hazard problem in information production. Prestigious underwriters who might be tempted to overprice securities in order to generate short-term gains do not actually do so because it would damage their reputation. Carter, Dark, and Singh (1998) show that, over the long run, issues managed by prestigious houses outperform those managed by ordinary ones. Also, Beatty and Ritter (1986) show that underwriters whose offerings underperform lose market share. Market share is the endogenous solution to precommitment and credibility problems. As a result, natural monopoly emerges as a separating equilibrium in which quality, commitment, and performance are related to one another.

To see how these insights provide a way to think about the default puzzle, compare two regimes in which there are both informed agents (intermediaries) and uninformed agents (investors). In the first regime, which we argue coincides with earlier times, informed underwriters combine liquidity provision (they help with the issue of bonds) and signaling services. In contrast, the functions of providing liquidity and signaling quality are separated in the second regime, where underwriters concentrate on issuing as many bonds as they can. Certification has been delegated to rating agencies that provide advice to investors.

We can readily see why the behavior of intermediaries will differ in the two regimes. The first regime provides an opportunity for certain underwriting banks to invest in prestige. Securing a reputation as a serious underwriter can become a source of rents because higher-quality securities have a broader market, and this fact can be used to attract the best borrowers and retain an initial monopoly position. We thus expect that such a regime will exhibit monopoly power, strong relationships between top underwriters and issuers, cherry-picking by the best underwriters, and a tendency for lower-grade securities to have difficulty finding a market. The reason is that the market for speculative bonds is operated by those underwriters with the least ability to certify (the lemons problem).

In the second regime, certification from other than underwriters does reduce potential informational rents for underwriters. If everyone knows the "true worth" of a security, then the marginal benefit of additional signals declines. Hence we expect financial intermediaries to compete more aggressively and underwriters to make more indiscriminate choices when picking securities. The portfolio of securities that hits the ground is thus of lower average quality than under the first regime. In sum, if certification has been outsourced, then underwriters escape liability risks. Investors are now advised of the risks and are encouraged to diversify it away. The result is the emergence of a "market for lemons."

II.   Market Power

Our view that earlier regimes rested on underwriter-based certification implies that we ought to observe more market power in earlier periods. In table 1, we organize some hard evidence regarding the degree of competition that prevailed during successive episodes. Working with the sources described in appendix A, we constructed two statistical measures of market power. The first measure we discuss is the Herfindahl-Hirschman (H-H) index. Recall that an index value below 1,000 is associated with an unconcentrated market. Values between 1,000 and 1,800 characterize a moderately concentrated market, and values above 1,800 indicate that the market is highly concentrated. The second measure is the market share of the top three underwriters.

Table 1 shows that the H-H index fluctuated over time but that the overall degree of concentration was typically higher during earlier periods. The highest degrees of concentration were in the mid-nineteenth, interwar, and late nineteenth-century Paris market (close to or above

Table 1
Characteristics of Primary Markets

Period	Number of Underwriters	H-H Index	Market Share Top Three (%)	Names of Top Three
1818–25	12	2,432	73.4	Rothschild B. A. Goldschmidt Thomas Wilson
1845–76	45	1,382	55.3	Rothschild Barings Imperial Ottoman Bank
1877–95	34	2,176	65.5	Rothschild Barings Hambros
1895–1913: London	33	1,196	51.7	Rothschild Hong Kong Bank Barings
1895–1914: Paris	14	1,746	65.0	Rothschild BPPB Banque Impériale Ottomane
1920–30: New York	20	2,869	68.9	JP Morgan National City Blair
1993–2007: New York	29	1,145	48.0	JP Morgan Citi Morgan Stanley
1993–2007: London	26	876	38.6	JP Morgan UBS Deutsche Bank
1993–2007: All	43	842	39.4	JP Morgan Citi Deutsche Bank

Source: See app. A.

1,800). There was also fairly high concentration (H-H index of 1,667) in the early period (1820s). Concentration for the 1880s and pre–World War I period was more moderate (values of 1,200 and 1,270, respectively). The lowest degree of concentration is obtained for the modern period (New York and London), for which indices are slightly above or below 1,000 and have an aggregate concentration of only 842.

After computing market shares for the top three underwriters, we find that they always controlled more than 50% of the market in historical time periods; the proportion is now below 50%. Peaks correspond to the early nineteenth century (London), late nineteenth century (Paris), and interwar period (New York), which are all above 65%. The low ebb is observed for New York and London today (48% and 38%, respectively). Again, market power is substantially lower today.

Finally, figures 2*a*–2*e* rank underwriters' market shares in various episodes. Striking features are the decline over time of the leader's share and the reduced difference now between the leader and its immediate followers. In the 1820s, Rothschild had 40.8% of the amounts loaned in London and the next intermediary (B. A. Goldschmidt) had 23.6%. During the interwar period, JP Morgan held 50.8% of the New York market whereas the next best (National City) had 9.9%. JP Morgan still leads the New York market, but only with 20.8%, and the next best (Citi) is close behind with 15%. We conclude the market for underwriting foreign government debts was highly concentrated until the interwar period, but it has become much more competitive as of late.

### III. Good Girls Go to Heaven, Bad Girls Go Everywhere

We now examine two more predictions of our theory. First, if prestigious underwriters formerly worried about retaining market share but do not today, then we should observe that they used to cherry-pick better securities and are much less discriminating today. Evidence of this is provided in figures 3*a* and 3*b*. The figures compare the ex ante quality of the portfolio of securities underwritten by the leading intermediary with the portfolio of the other firms. Here "quality" is measured in terms of the distribution of spreads (evidence from ratings, when they are available, provides similar results). A noticeable difference between figure 3*a* and figure 3*b* is that the interwar leader specialized in higher-quality securities whereas the modern leader tends to issue securities of similar or lower quality than followers. Figure 4 provides evidence of the average yield brought out by the "best and the rest" in a number of time periods. The figure shows that, until the interwar period, the best always issued safer securities than the rest.

The other test we consider looks at ex post results. Suppose that serious underwriters make careful choices to protect market shares. We should expect problems (measured here by default events) to be concentrated within the lower end of the underwriter spectrum: less prestigious houses, which are also the ones with the smallest market shares.[20] A convenient tool to capture this intuition is to construct Lorenz curves of underwriters' performance. Ranking intermediaries' market shares from the smallest (low prestige) to the largest (high prestige) and then plotting the cumulated share of underwriters' securities in default (as a percentage of the total amount in default) help explicate the risk taking of underwriters. To see this, we use (x_k, d_k) to define the pair formed by the amount underwritten by bank k (x_k) and the defaulted amount previously
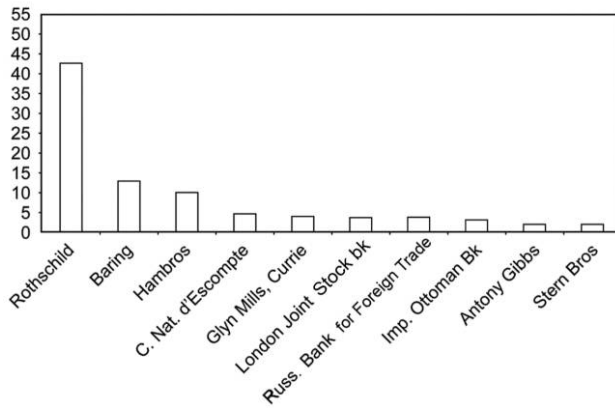
2a
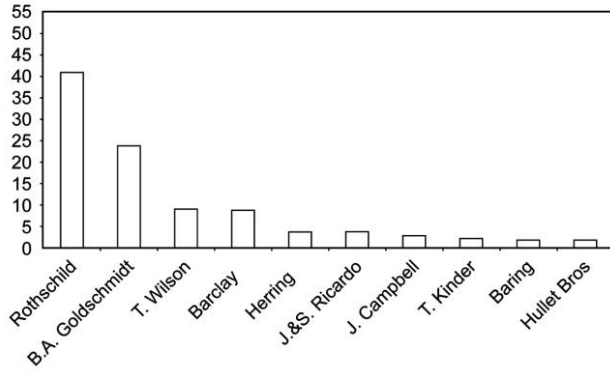
2b
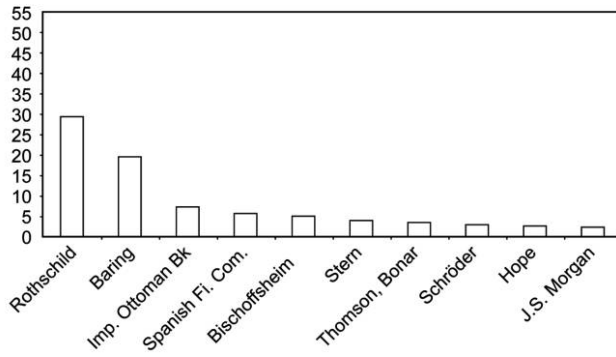
2c

Fig. 2. Ranking of top 10 underwriters by market share (percentage): *a*, 1818–29; *b*, 1845–76; *c*, 1877–95. Sources: Authors' computations from own database; see appendix A.
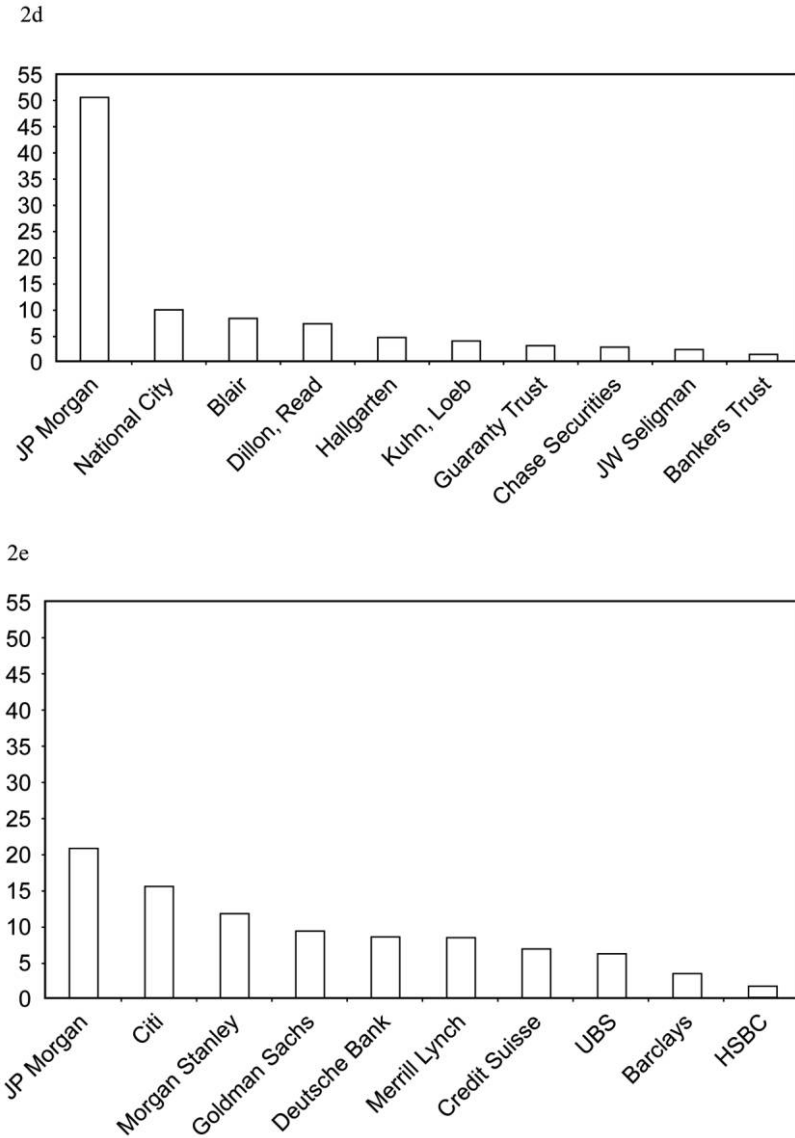
2d

2e

Fig. 2 (*continued*).   Ranking of top 10 underwriters by market share (percentage):
d, 1920–30; *e*, New York, 1993–2007. Sources: Authors' computations from own database;
see appendix A.

underwritten by bank k (d_k). Indices k are ordered by the amount of
banks' underwriting:

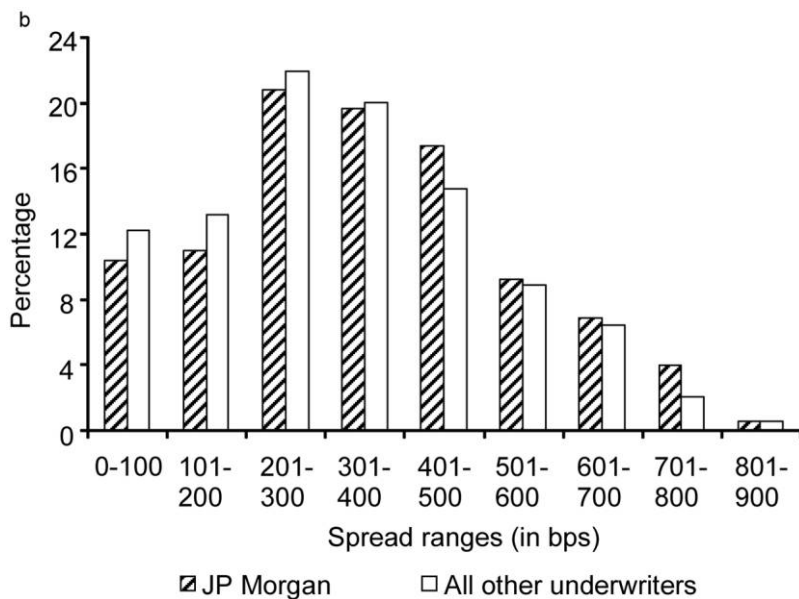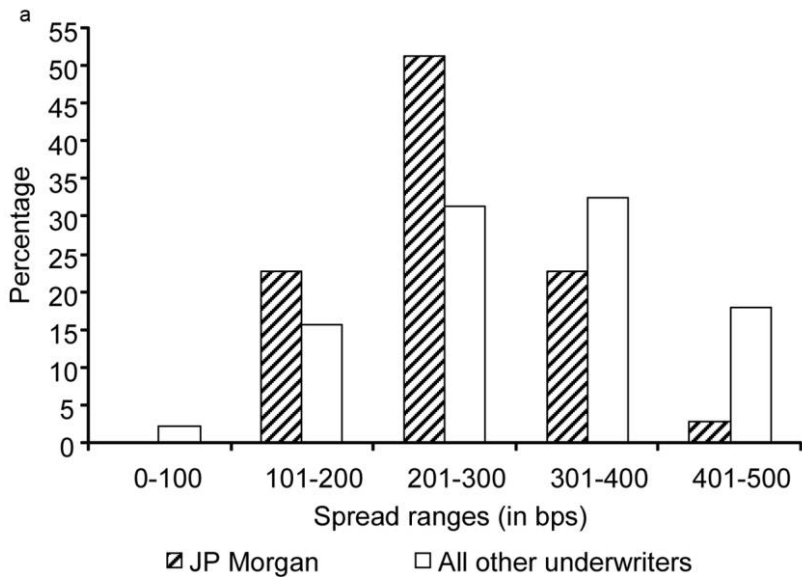$$x_1 < \cdots < x_k < \cdots < x_n. \tag{1}$$

Fig. 3. Spreads at issue: market leader versus the rest: *a*, New York, interwar period; *b*, New York, modern era. Sources: Authors' computations from own database; see appendix A.
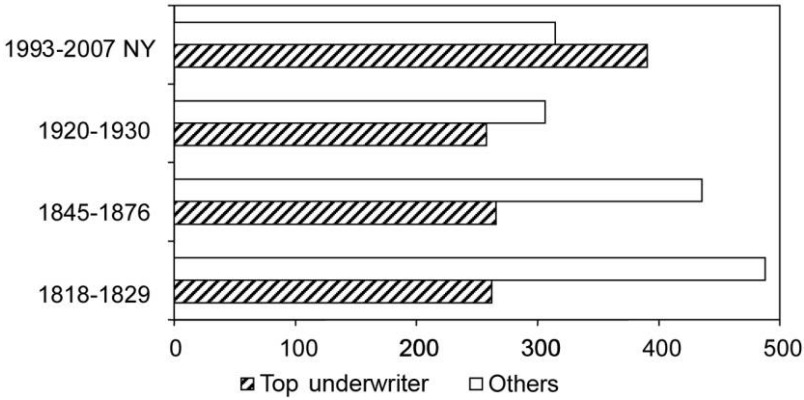
Fig. 4. Risk taking: average spreads in basis points for the best and the rest. Sources: Authors' computations from own database; see appendix A.

The cumulated market share X_k for banks with smaller market shares than k is

$$X_k = \frac{\sum_{i=1}^{k} x_i}{\sum_{i=1}^{n} x_i}, \tag{2}$$

and the cumulated default share D_k for banks with smaller market shares than k is

$$D_k = \frac{\sum_{i=1}^{k} d_i}{\sum_{i=1}^{n} d_i}. \tag{3}$$

Finally, the Lorenz curve of underwriters' performance is then defined by the pairs (X_k, D_k).

Suppose that underwriters do not worry about what happens to the securities they have sold. Then default is random: the smallest underwriter with (say) 5% of the securities underwritten will have about 5% of the defaults; when combined with the next-larger underwriter who has (say) 10% of the market, this will account for about 15% of the defaults, and so on. The resulting Lorenz curve should therefore be close to the 45° line. Now suppose that prestige does confer a larger market share but also requires placing only good securities (otherwise prestige will be lost). In this case, the smallest (least prestigious) underwriter with 5% of the securities underwritten will have much more than 5% of the defaults (say 20%). In contrast, the largest (most prestigious) underwriter with (say) 20% of the securities underwritten may have
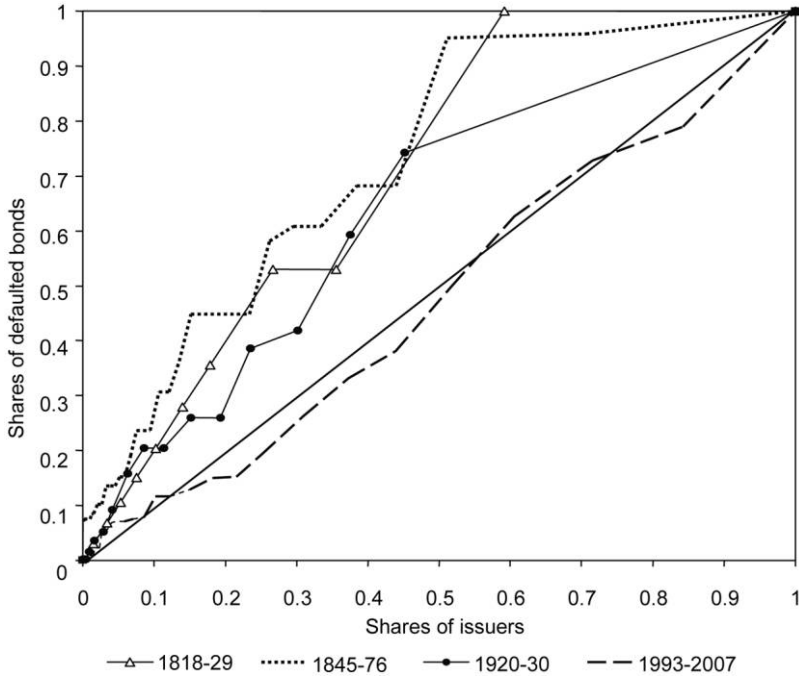
Fig. 5. Lorenz curves: three debt crises (1820s, 1840s–70s, 1920s) versus today. The straight line (diagonal) is the 45° line. Sources: Authors' database; see appendix A.

only 5% of the defaults. The resulting Lorenz curve should therefore be concave.

To test for these possibilities, we consider four episodes (fig. 5). As before, the "past" is represented by the three most violent historical debt crises in history (1820s, 1844–75, and 1920–30). In comparing these episodes with the modern period, we find that the former are associated with strongly concave Lorenz curves. This contrasts with the modern period, in which the Lorenz curve essentially overlaps with the 45° line. This is consistent with our view that default was not randomly distributed in the past because underwriters formerly made careful choices.

IV.   Fees and Risk Taking

That underwriters were more heavily involved in the past than they are today should imply that, other things being equal, they took on more risks and required substantially larger fees than is now the case. To show this, we first summarize qualitative evidence obtained from our study of

many early underwriting contracts as well as interviews with modern market participants; we then provide new data on the long-run evolution of underwriting fees.

A.   Underwriting Contracts, Past and Present

Today, a key aspect of any international bond issue is the "agreement" between the main underwriter and the government. This document specifies the particulars of the issue, such as the bond structure. One central aspect of the agreement is the "distribution system." In principle, distribution could take the form of either "best efforts" or "firm commitment"—two forms that are known in other segments of the capital market. Under best efforts, the intermediary pledges to help in the sale of bonds but does not bind itself to acquiring any if there are no other buyers. That is, a failed issue creates no liability. By contrast, in a "firm commitment" arrangement, the financial intermediary agrees to purchase all securities directly from the issuer for sale to the public and is liable for any unsold inventory. Interviews with market participants suggested that "best efforts" is the ruling pattern today.[21]

In the past, the contract signed between governments and underwriters was also a central part of the process. We have examined many such contracts. As today, the main choice was using the underwriter either as merely distributor of the bond or rather also as full insurer of the issue's success. The former arrangement was known as "sale on commission" and the second as "firm taking." These are equivalent to the modern systems of best efforts and firm commitment: with sale on commission, underwriters received subscriptions for the purchase of bonds but took no liability in the result of the issue.[22] With firm taking, the issue was understood to be purchased from the government and then resold to the public. Mixed arrangements involved partial commitment with a portion sold on commission.[23]

The contracts that we examined indicate that firm taking became the dominant pattern over the nineteenth century, although there were periods and countries for which a greater proportion of sales on commission can be observed. It is fair to say that, by the end of the nineteenth century, full or quasi-full underwriting had become the nearly absolute norm. However, there were still some exceptions. We found that Barings initially favored sales on commission. Testifying in 1875, one Barings employee drew a sharp contrast between issues for which they acted as genuine "contractors" (fully underwriting the issue) and issues for which they would be mere "agents" (only placing the loan in the market), adding

that "most generally loans are issued by the firm [i.e., Barings] in London as *agents* for the Government" (Great Britain. House of Commons 1875, 1; our italics).[24] This declaration is consistent with the actual Barings contracts that we could inspect. Yet over time, even Barings moved to full underwriting.

The same pattern (i.e., predominance of the full underwriting contract) also prevailed during the interwar period. The Senate Committee hearings provide much evidence that this was the case in the New York market, and British bankers examined before the Macmillan Committee in 1931 also emphasized this fact. Sir Kindersley (of Lazard) made a distinction between a "bank" or mere distributing institution and an "issuing house" or genuine originator and underwriter, and he emphasized the importance of actually buying the securities it distributed. "Q. 1302. Do you buy up the issue yourselves?—Yes. I think that another difference between an issuing house and a bank is that an issuing house, not always, *but I think in the majority of cases purchases the security and re-sells it to the public. It takes the definite risk and purchases it*. … This is what generally happens" (Great Britain. Committee on Finance and Industry 1931, 77–78; our italics). To use the language of Kindersley, modern intermediaries are more like "banks" than "issuing houses." The prevalence of a more coercive business norm in the past is further supportive evidence of our central claim.

B. Fees and Risk Taking

Can we provide some numbers that support our suggestions based on qualitative evidence? Table 2 gives ranges for fees; sources (archival or other) are indicated in the table note. Columns 1 and 2 report data on fees and spreads within the subsample of securities for which we do have material. The ratio of fee to spread is computed for the dominant underwriting pattern (best efforts for the modern period and full underwriting for earlier times). The table supports the notions that emerged from our previous discussion. The fee/spread ratio was much higher in the past. It has declined significantly in recent periods, which is consistent with our finding of a more limited underwriting service today.

One may worry that part of the result is driven by technological progress that makes modern underwriting more efficient, but we are skeptical of this objection. Most of the revenues from underwriting must come from the risks involved (captured by underlying volatility), which we control by using division by spreads. But to address this concern, table 2

Table 2
The Evolution of Underwriting Fees in the Very Long Run

Period	Average Fee[a] (%) (1)	Retention Coefficient (Fee/Spread) (2)	Firm Commitment			Best Efforts		
			Min (3)	Max (4)	Average (5)	Min (6)	Max (7)	Average (8)
1818–29: London	8.3	2.8	3.6	16.1	8.3	1	5.2	3.7
1845–76: London	6.1	1.9	1.5	13.1	6.1	1	2	1.8
1877–95: London	4.4	1.7	1.3	12.4	4.4	.3	3	1.83
1896–1914: London	4.9	2.7	1.0	8.2	4.9	1	2.75	2.18
1896–1914: Paris	4.1	3.8	1.6	9.1	4.1	1	2	1.56
1920–30: NYSE	5.0	1.7	1.1	15.2	5.0	NA	NA	NA
1993–2007: NYSE	.54	.15	NA	NA	NA	.02	2.75	.54
1993–2007: London	.76	.26	NA	NA	NA	.04	3	.76
1993–2007: All	.84	.25	NA	NA	NA	.02	3.37	.84

Source: Authors' computations. Fees: Great Britain. House of Commons (1875), Oficina Central de Estadísticas (1927), U.S. Congress (1932), Gille (1973), Amaral (1984), Ziegler (1988), Dawson (1990), Dritsas (1993), Suzuki (1994), and Flores (2004). Archives: Rothschild Archives, ING Baring Archives, HSBC Archives, Crédit Lyonnais Archive, and Guildhall Library. Spread at issue from sources described in app. A. Benchmark risk-free rates: London, NBER macro database (before 1870) and Klovland (1994) after 1870; Paris: Vaslin (1999); New York interwar, *Wall Street Journal*. Modern period: Dealogic.
[a]Main issuing system.

also decomposes the available evidence to report minimum, maximum, and average fees according to alternative underwriting regimes.[25] We find that earlier times' best-efforts fees were not much different from modern ones (they were somewhat larger on average but did not fall outside the modern range). This leads us to conclude that technological progress cannot account for the decline in fees. Instead, we explain it by the reduced scope of current underwriting services. The real transformation is the changeover from one business norm to another.

Further evidence on the matter can be garnered by looking at the correlation between spreads and fees. Recall that, under firm commitment, the intermediary assumes all the risk of the issue, and this risk is related to the bond's volatility.[26] We should thus expect a stronger association between spreads and fees in the past than now.[27] Results are shown in table 3: we do find substantially higher correlation coefficients in the past. Another test in table 3 enables us to assess the significance and sensitivity of fees to spreads under different regimes. We run a simple ordinary least squares regression of fees on spreads, plus a constant. We find higher levels of significance and sensitivity, as well as higher R-squared values, in the past. This is consistent with a greater passthrough of country risk into underwriting fees and, once again, indicates that today's financial intermediaries take fewer risks.

Table 3
Fees and Spreads (Firm Taking)

Period	R^2	Fee = $a + b \times$ Spread (t-Statistics)	H_0: Significance of Spread (at 5%)
1818–29: London	NA	NA	NA
1845–76: London	.56	Fee = 3.421 + .65 × spread (3.17) (2.75)	Accept
1877–95: London	.43	Fee = −1.843 + 2.492 × spread (−1.1) (4.0)	Accept
1896–1913: London	.41	Fee = 1.9535 + 1.479 × spread (3.1) (5.0)	Accept
1896–1913: Paris	.65	Fee = 1.658 + 1.513 × spread (8.53) (5.85)	Accept
1920–30: NYSE	.32	Fee = .62475 + 1.497 × spread (1.00) (7.24)	Accept
1993–2007: NYSE	.0002	Fee = .55642 + .004 × spread (10.56) (.27)	Reject
1993–2007: London	.027	Fee = .59129 + .052 × spread (7.5) (2.2)	Accept
1993–2007: All	.003	Fee = .8014 + .017 × spread (12.6) (1.29)	Reject

Source: Same as in table 2.
Note: Spreads and fees are in percent.

V.   The Evolution of Contagion

Another implication of our analysis is that, because their reputation is at stake, serious underwriters should take special care to ensure that their sponsored issues turn out well. In other words, the concavity of the Lorenz curve discussed earlier is a primary concern for them. There are various ways to test for this hypothesis. One way is to look at whether banks are involved in secondary markets. Brand-conscious underwriters ought to worry about excess volatility or contagion spilling over to "their" securities. Accordingly, they should intervene to prevent such events.

Interviews with modern bankers suggested that underwriters today offer some partial participation in the secondary market. However, the underwriter is typically not obliged to make a secondary market for the bonds, which is consistent with best-efforts contracts.[28] Underwriter responsibility is thus limited to placing the bonds in the market and making an effort to stabilize their price in the secondary market for an unspecified duration. The underwriter is never expected to act as "lender of last resort" on the bonds issued by governments.[29]

In previous eras, underwriters frequently engaged in market operations to support the government bonds they were issuing, and these purchases

went far beyond the initial issue and placement of the bonds. Such operations occasionally came up in the press or in parliamentary commissions in reference to "fictitious" operations to "inflate" bond prices, which did occur in some cases.[30] As a result, bankers often denied that they were involved in such schemes,[31] although leading houses acknowledged their role as lender of last resort. Rothschild's testimony before the Select Committee is an example (Great Britain. House of Commons 1875, 267). Flandreau and Flores (2009) report evidence of massive purchases of Rothschild-sponsored securities during one episode of financial contagion in the 1820s. Kahn (from the firm Kuhn and Loeb) gave testimony before the Senate Committee in 1931 that acknowledged the existence of support purchases and added that underwriters were under "permanent moral liability" to make ends meet. As he stated, "we have frequently made it our business, a contingent part of our obligation, that if there is an undue or unjustifiable decline in bonds, if there is not a fair market for the bonds, we have more than once gone into the market in order to afford the opportunity to such people as may want to sell, or are compelled to sell, within the limits of proper prudence, and within the limit of our ability, for them to do so" (U.S. Congress 1932, 135).

Table 4 reports data that bear on this issue. Namely, we have organized figures on past and present markets in terms of monthly bond spreads in sterling bonds (1820s) and U.S. dollar bonds (now). To facilitate comparisons with earlier work, we use the measure of contagion proposed by Mauro et al. (2006), who identify sharp changes in bond spreads (defined as changes exceeding either 200 basis points or 20%) and then count common sharp changes across countries. We see that jumps are more frequent today and that contagion is comparable. The next stage is to sort out securities issued by the underwriter with the largest market share. That is, we isolate Rothschild securities and JP Morgan securities from the rest. While Rothschild specialized on a more limited number of countries (Austria, Brazil, Naples, and Russia), JP Morgan is underwriting all governments in the sample. In other words, there is no such thing as "a JP Morgan security" or, to put it differently, the JP Morgan portfolio is essentially the market portfolio. The "non-Rothschild" and "Rothschild" columns drive our story home by showing that all the contagion did cluster around non-Rothschild securities. This we interpret as the combined effect of (a) the signaling of good securities by prestigious underwriters and (b) an underwriter's willingness to intervene in support of "its" securities (to prevent a decline in its reputation). We conclude that good intermediaries were concerned about the performance of any security they sponsored, and this explains why they were willing to help

Table 4
Clusters of Contagion

| | Past: 14 Countries, 1822:3–1829:12 | | | | | | Present: 8 Countries, 1994:11– 2004:2 | |
| | Total | | Non-Rothschild | | Rothschild | | Total and JP Morgan | |
	200 bps	20%	200 bps	20%	200 bps	20%	200 bps	20%
Sharp changes (% of observations)	5.83	4.54	10.5	7.6	0	2.5	13.2	12.9
% months without sharp changes	37.2	51.1	37.2	45.7	100	90.4	43.2	44.1
Sharp changes in one country	20.2	26.6	20.2	25.5	0	8.5	30.6	34.2
Sharp changes in two countries	16.0	11.7	16.0	11.7	0	0	15.3	7.2
Sharp changes in three or more	26.6	10.6	26.6	8.5	0	1.1	10.8	14.4
Sharp changes in two or more	42.6	22.3	32.6	20.2	0	1.1	26.1	21.6
Contagion ratio[a]	67.8	45.6	67.8	44.2	0	11.1	46.0	38.7

Source: Past: Authors' computations from Wetenhall (see Flandreau and Flores [2009] for details). Present: Mauro et al. (2006, 115).
Note: The 14 countries for the past are Argentina (independent State of Buenos Aires), Austria, Brazil, Chile, Colombia, Greece, Guatemala, Kingdom of Naples, Mexico, Peru, Portugal, Prussia, Russia, and Spain. The eight countries for the present are Argentina, Brazil, Bulgaria, Mexico, Nigeria, Philippines, Poland, and Venezuela. Because of missing observations, we may slightly underestimate the extent to which there were sharp changes.
[a]The contagion ratio is the proportion of sharp changes in at least two countries to sharp changes in at least one country.

even in the absence of contractual obligations to do so. This phenomenon is entirely absent from today's markets. Our finding may shed light on the evolution of contagion over the long run.

VI.   Turnover and Reputation

Another bit of evidence can be garnered by looking at turnover. The tendency (previously identified) of underwriters in previous eras to band with issuers should be reflected in some properties of turnover rates. Consider this reasoning as applied to what we have called the "past" regime: good issuers benefit from association with prestigious underwriters because such intermediaries are prepared to support them. Of course, issuers are charged for this support (we found higher fees then than now). Good issuers may want to bargain for better terms, yet going

to lesser underwriters would make investors wary. And since there are, by definition, few good underwriters, turnover at the top should be small. (If we consider that dropping by more than one notch in the underwriting scale would entail reputational costs, any turnover should be limited to switching between the top two firms.) On the other hand, lesser issuers have an incentive to shop around, because prestigious underwriters prefer not to deal with them and because the remaining underwriters are substitutes for one another. As a result, we should expect more turnover at the bottom. The implication of these remarks is that, for the "past" period, we should observe a positive correlation between turnover and spreads at issue, other things being equal.

In contrast, we find the modern market to be very competitive and all underwriters do pretty much the same thing. Here the implications are that (*a*) average turnover ought to be more substantial (all issuers shop for the best price) and (*b*) there should not be any correlation between turnover and spreads. Thus we have two more testable propositions of our theory. They are examined in figure 6, which correlates (by country) turnover and average spread at issue. The figure also permits us to locate visually the "average" turnover (between 0% and 100%). The periods chosen are the modern era and a longer chunk of time (London 1877–1914) than in other tests. This was done in order to ensure the statistical significance of turnover rates in the presence of less frequent market access then than now.[32]

The result in figure 6 is striking. First of all, it is obvious that average turnover has increased tremendously in the modern period. Computations show an average turnover of 51% for the historical period against 86% for the modern one. Second, we observe a positive association between turnover and spreads for the historical period. There is no such association for the modern period, which is consistent with our predictions.

VII.   The Market for Lemons

The last proposition we examine is as follows: if reduced asymmetries of information permit large underwriters to escape liability costs, then we should observe a transformation in the characteristics of the bonds that are issued today compared to earlier periods. Although safer bonds that could make it to the market then should still be around now, riskier ones that had a harder time in the past have become less penalized and should now feature more prominently. In other words, in the modern era, a market for lemons is born.

To document this assertion, table 5 provides basic characteristics of the population of government securities that made their way to the
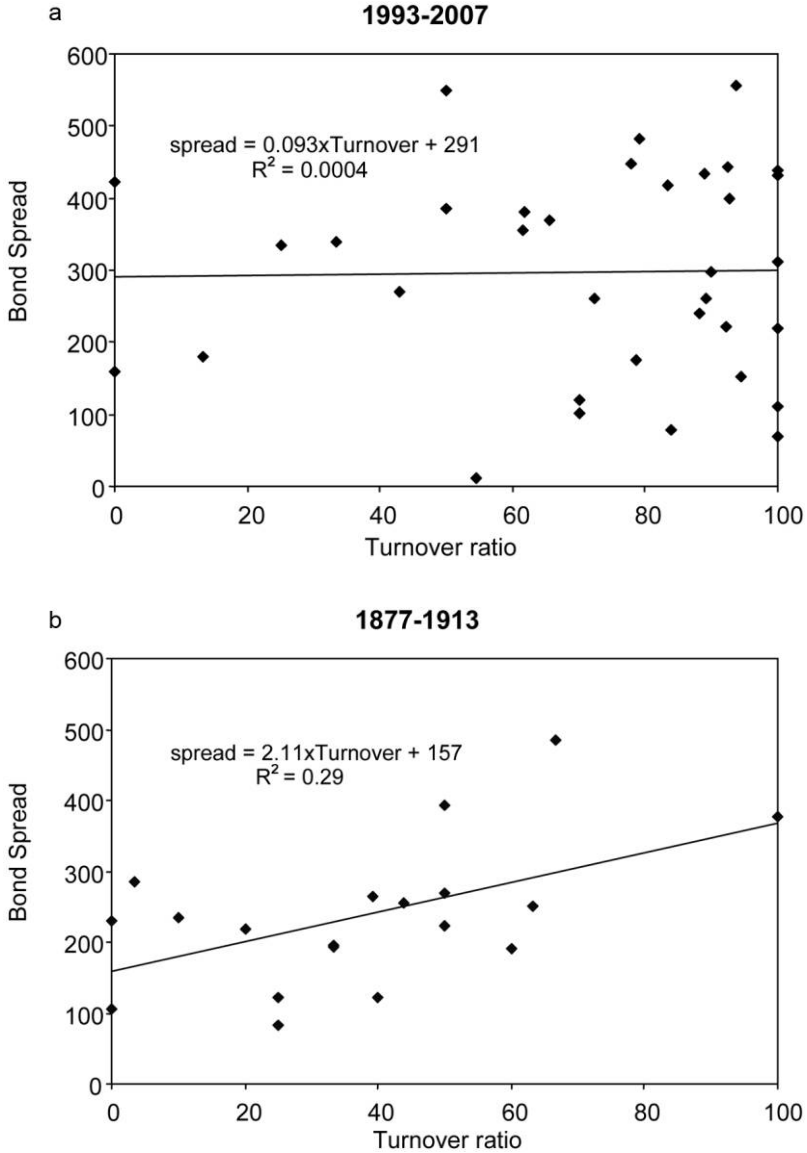
a

1993-2007

$$spread = 0.093 \times Turnover + 291$$
$$R^2 = 0.0004$$

Bond Spread

Turnover ratio

b

1877-1913

$$spread = 2.11 \times Turnover + 157$$
$$R^2 = 0.29$$

Bond Spread

Turnover ratio

Fig. 6.　Turnover (%) and spreads (bps): *a*, now; *b*, late nineteenth century. Sources: Authors' database; see appendix A.

marketplace during different time periods. We outline a number of basic measures. We report the number of securities that could be identified and then give the number of countries that accessed the global capital market. The next columns list data for the minimum, maximum, and average size

for the securities in the corresponding group and also a conversion of these amounts to 2008 U.S. dollars (where we have used http://www.measuringworth.com/index.html to convert amounts).[33] We then report information on maturity and risk. Maturity is the time lag to date of redemption as stated in the initial issuing documentation or the press;[34] risk can be measured by looking at either yield premium at issue or rating at issue. Because rating agencies did not begin assessing sovereign debt until after World War I, this measure is available only from the interwar period onward (see Flandreau et al. 2009).

There are two features that emerge from table 5. The first is the shorter maturities now than in earlier times. During the nineteenth century, average maturities lengthened gradually: from 31 years (1818–29), to 33 (1845–76), to 47 (1877–95), and finally to 43 (pre–World War I). At about the same time (1880–1914), maturities were comparable in Paris (about 50 years). The interwar period saw a substantial decline of maturities, but they remained longer than 25 years. This contrasts with the recent period, for which average maturities have been halved (New York) or reduced by a factor of three (London). The modern average maturity is less than 10 years. This reduction in length of maturity has been noted before, but its significance has not been explained. Theory suggests that restricting maturity of the debt facilitates control because it gives lenders a sanction over borrowers (Montiel 2003). Hence one possible interpretation of the evidence on maturities is that foreign debt is inherently riskier today than in the past.

The second intriguing fact concerns the evolution of spreads. The shortening of maturities makes direct comparison of spreads difficult owing to upward-sloping yield curves. Broner, Lorenzoni, and Schmukler (2004) argue that today's emerging economies employ short-term borrowing because of the higher risk premium charged by international capital markets on long-term debt. As a result, long-term debt yield premia that would prevail if countries borrowed today as they did in the past might be higher than what we observe. With this qualification in mind, we see that average spreads are at least as high today as they were in the past, implying that counterfactual long-term rates might be substantially higher. Spreads declined over the nineteenth century, from 357 and 397 basis points (1820s and midcentury, respectively) to 275 (1880s) and 215 (pre–World War I); then they rose again during the twentieth century, standing at 291 in interwar New York and at 364 for the same market in the modern period (the average spread in London is now 288 basis points). Similar spreads associated with substantially shorter maturities may thus be indicative of riskier debt.

Table 5
Characteristics of Emerging Market Debt

Period	Number of Bonds	Number of Countries	Amount (Min, Max, Average)	In 2008 $ (Min, Max, Average)	Maturity (Min, Max, Average; Years)	Yield Premium at Launch (Min, Max, Average; bps)	Rating at Launch (Max, Min, Average)
1818–29: London	23	14	£.6M £6.4M £2.5M	$65.7M $701M $273.8M	20 60 31	84 597 357	NA
1845–76: London	148	39	£.1M £165M £7.5M	$9.9M $16,331M $742M	8 98 33	66 933 397	NA
1877–95: London	106	29	£.04M £140M £6.3M	$4.5M $15,759M $709M	5 99 47.6	28 685 275	NA
1895–1913: London	100	30	£.07M £38.4M £3.8M	$7.75M $4,250M $420.6M	5 98 43.3	17 500 215	NA

1880–1913: Paris	121	29	FF10M	5	−49.6	NA
			FF1,362M	98	368	
			FF177.6M	50.4	125	
1920–30: New York	124	36	$.148M	2	42	Aaa
			$125M	50	455	B
			$26.29M	26.7	291	A
1993–2007: New York	404	33	$3M	1.5	53	A+
			$3,951M	100	824	B–
			$698M	12.6	364	BB
1993–2007: London	236	34	$19.9M	1.5	21.6	AA–
			$3,910M	35	825	CCC+
			$480M	7	288	BB+
1993–2007: All	876	50	$3M	1.5	11.6	AA–
			$3,951M	100	825	CCC+
			$558M	9.9	333	BB+

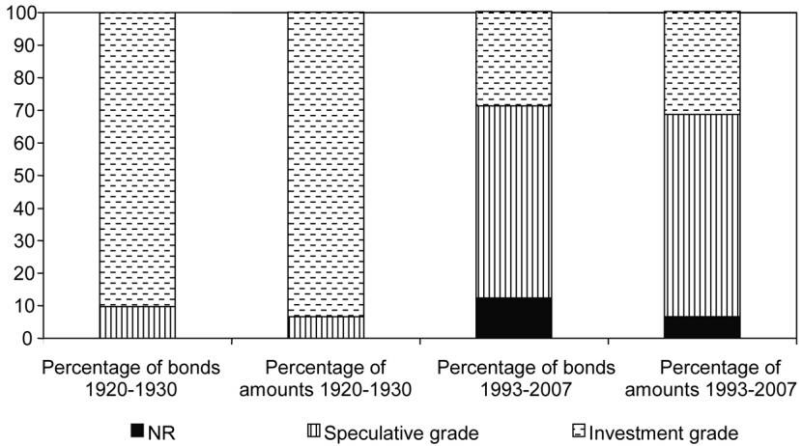Source: Authors' database; see app. A.

Fig. 7.   Percent investment grade and speculative grade securities (interwar period and now). Sources: Authors' database; see appendices A and C.

Another piece of interesting information is provided by average ratings, which are indicated in table 5 and detailed in figure 7. In order to enable comparisons across time periods, figure 7 aggregates modern ratings to match earlier, coarser granularity (see app. C for details on mapping modern ratings to earlier ones). Figure 7 illustrates the cutoff between investment grade and speculative grade securities, which was already recognized in the interwar period.[35] As can be seen in table 5, the average rating for foreign debt was above investment grade during the 1920s (averaging A) but is now squarely within speculative grade (with an average of BB for New York and BB+ for London). In figure 7, we see that the speculative grade category was extremely narrow during the interwar period, but it is much broader today. In other words, a genuine liquid market for speculative grade government securities has arisen. In the language of one Alliance Capital interviewee who described the modern market, "Underwriters will underwrite anything, for a fee." We argue that, in the past, reputable underwriters prevented riskier securities from reaching the market because of brand concerns.

VIII.   Regime Change

This paper has outlined the contours of two successive certification regimes: the old one, which rested on underwriters' signals, and the new one, in which underwriters have outsourced the certification service to rating agencies. One pending question is why this transformation occurred: Why was certification outsourced to rating agencies? In this

section we review a number of arguments that may explain why underwriters shed their earlier role as gatekeepers of the quality of international government securities.

A natural explanation that comes to mind is progress in information technology. The insider knowledge of the "Rothschild era"—as well as the superior technology provided by pigeons, reliable correspondents, and so forth—would become less important in today's world, when information can race across continents at nearly the speed of light. Investors now learn about market prices in real time. Moreover, governments today are more open and transparent and are also more uniform in reporting data. These factors must have played a role, yet they seem to lose significance in the face of the abruptness with which the regime change occurred. After all, there were radical changes in information technology that occurred between the 1820s and the 1920s. News that once took days or even weeks to reach leading markets became available in seconds. Although seconds have been sliced to fractions of a second since the 1920s, the marginal change is smaller. It is therefore unclear, if technology is what matters most, why the interwar period was so much like the early nineteenth century (itself similar to the eighteenth century) but so different from the modern era.

Another counterargument to the technology-based explanation is that, once a signaling regime of the kind that prevailed in the past is in place and performs well, there are no reasons to replace it: incumbents see no advantage in changing the status quo, and outsiders are unable to do so. In other words, we expect to see a fair amount of persistence in certification regimes, quite apart from the strict availability of information. Supporting this conjecture, we note the persistent leadership of the House of Rothschild in the nineteenth century (it could be displaced only when the market moved to New York, where Rothschild had no presence). Its leadership continued even as carrier pigeons were replaced by telegraph and as word of mouth was replaced by *The Economist*'s *Investors' Monthly Manual*. Similarly, Moody's, Standard Statistics, Poor's, and Fitch, all of which began rating sovereigns during the interwar period, coexisted with the "JP Morgan" certification regime identified previously. Still, they were unable to displace this regime. During the 1931–32 U.S. Senate hearings before the Committee on Finance, nobody from the rating agencies was asked to testify, but bankers, economists, and government statisticians were. When discussion centered on the measurement of "overindebtedness," the opinions of Moody's were not sought. In other words, even when new vehicles are available to provide information, investors do not necessarily use them or coordinate the information from them.

Following this line of reasoning, a possibility we believe worthy of consideration is that, at the time when the current regime was put in place, underwriters could no longer be considered credible certifiers. Note that, between the collapse of the 1930s and the securitization of the 1980s (Brady bonds), there were about 50 years during which the international government debt market was a sleeping beauty. The accounts we have of the conditions under which this market was reawakened do suggest that certification by underwriters was not an option. A senior manager from Moody's, sharing his memories of the 1980s, suggested that sovereign ratings had to be reinvented in a rush because they were critical for booking and marketing purposes. We interpret this as suggesting that, since the Brady bonds were designed to off-load defaulted debts from the balance sheets of international banks, the very same banks that had already made bad choices could hardly be credible certifiers of government securities. Hence some other certification instrument had to be conceived. As a result, when the international government debt market woke up, the first thing she saw was a rating agency, and she immediately fell in love with it. (Though, as with all couples, there would be crises later on.)

The investment banks that became involved in the new market probably welcomed the transformation (they included reincarnations of interwar New York leaders such as JP Morgan or National City Bank). Fees were now smaller, of course, but liability risk was also reduced. Rating agencies would be the new lightning rod for accusations of financial malpractice. The banks, although undoubtedly informed, would now be able to show to unhappy customers the grades given by (possibly less informed) rating agencies. Academic economists have lent support to this interpretation, blaming the agencies (Ferri, Liu, and Stiglitz 1999; Reisen and Von Maltzan 1999). Against the reduction of fees stood reduced maturities that increased the frequency of market access events, which increased revenues. In addition, the emergence of a new market for lemons created new opportunities by increasing the total amount to be underwritten. The net effect may have depended on the particulars of each specific bank, but we can safely suppose that, if there were profits to be made by reverting to the old regime (i.e., by limiting investment to select securities as a signal of one's worth), then the industry would have already figured it out.

Other factors that may have pushed in the same direction include questions of ownership and control in investment banks. Both British-style merchant banks and U.S.-style investment banks were formerly private institutions, and owners of the capital kept a close eye on the deal makers (or originators) because they were the same. But modern investment

banks are listed companies and thus may have a shorter time horizon. The agency problems created by the distribution of bonuses to investment bankers have naturally reinforced the need for external certification services. This explains why rating agencies have now become part of the regulatory and certification infrastructure, a role they did not play in more distant times.[36] In this context, the rise of the use of ratings and the change of private investment banks into listed companies are complementary transformations. It remains to be seen whether we are safer with underwriting and certification made by the same agent or instead split across various financial intermediaries.

IX. Conclusion

In a nutshell, we find as follows. In earlier periods, investment banks provided their customers at both ends (lenders and borrowers) with a vast array of services; banks acted as broker, certifier, and lender of last resort when issues failed. Today, certification is mostly provided by rating agencies, and so underwriting banks perform the more limited function of "making the market" for the issuing government. We demonstrate that a result of this transformation is considerably lower fees (as a share of the amount issued) now than in the past. A further implication is that government debt today is by construction more risky and volatile than it was in the past. Moreover, this debt is certified by agents who do not have direct access to the flow of soft information normally obtained through the underwriting and banking relationship. Instead, these agents must rely on published information only. Should trouble come, rating agencies have no means to help and no privileged information. Underwriters have no reason to provide support, because they have escaped liability by transferring certification duties to the rating agencies. By contrast, in the past, a bank as both issuer and certifier saw the wisdom of not jeopardizing its reputation and was often willing to serve as a lender of last resort.

Although this evolution may have beneficial aspects (e.g., it enables high-risk countries to borrow when before they were "rationed out"), we speculate that it has engendered new risks. First, it may have weakened market discipline. Since underwriters have been able to pass on to others the liability of making wrong choices, they have also softened borrowing governments' incentives to make adjustments when needed. Second, the degree to which the increased risk that is built into the system remains manageable hinges critically on the ability of investors to diversify. Yet no one has demonstrated that diversification is actually feasible

in the face of large, correlated supply shocks. It is thus our contention that future crises will be different and exhibit more dangerous features than previous episodes.

In a recent piece of professional self-introspection, Acemoglu (2009, 2–3) writes about one of the several notions he felt had been destroyed by the subprime crisis: "our logic and models suggested that even if we could not trust individuals, particularly when information was imperfect and regulation lacklustre, we could trust the long-lived large firms—companies such as the Enron's, the Bear Stearn's, the Merrill Lynch's, and the Lehman Brothers's of this world—to monitor themselves and their own because they had accumulated sufficient reputation capital. Our faith in long-lived large organisations was shaken but still standing after the accounting scandals in Enron and other giants of the early 2000s. It may now have suffered the death blow." This paper sheds light on why such faith was disappointed: we assumed, incorrectly, that the present would be much like the past.

Appendix A

Data

Historical Sample

Data on the characteristics of financial instruments were collected using traditional London sources such as Fortune's *Epitome*, the *Reports* of Corporation of Foreign Bondholders, Burdett's *Stock Market Official Intelligence*, London Stock Exchange Official Intelligence, and the financial press (*The Economist* and its supplement, the *Investors' Monthly Manual*, and *The Times*). For Paris, we relied on the *Annuaire Officiel des Agents de Change* (1882–1914).[37] For New York, we have relied on the Moody's manuals, Fitch *Bond Books*, and Poor's *Volumes,* as well as on the U.S. Senate Committee on Finance Hearings on the Sale of Foreign Bonds published 1932 (U.S. Congress 1932). Data on defaults are obtained from these sources.

Modern Period

The now period (1993–2007) is covered using DCM Analytics, the fixed income product of Dealogic (global coverage of the debt capital markets), an investors and financial intermediaries service. It is described in Nieto-Parra (2009). For defaults, we combined a data set for sovereign default

on foreign currency debt provided by Moody's *Foreign and American Government Securities* and a useful database from Sturzenegger and Zettelmeyer (2005), which we matched against the Dealogic population of issues.[38]

Fees

Apart from occasional mentions in the contemporary press or in secondary sources indicated in sources for tables, material on fees does not exist for the early periods. It was entirely constructed from archives. The patience of archivists from Rothschild, ING-Baring (Baring Brothers), HSBC (Hong Kong and Shanghai Banking Corporation), the Guildhall Library (Hambro and London Stock Exchange Archive), BNP-Paribas (Banque de Paris et des Pays-Bas), Crédit Agricole (Crédit Lyonnais), and the Centre d'Archives du Monde du Travail (Rothschild frères, Banque Impériale Ottomane) is gratefully acknowledged for they allowed us to open literally hundreds of boxes in search for original contracts.

Regarding the interwar period, fees have been previously published by Kuczynski (1932) and Lewis (1938). Both have worked with, and somewhat interpreted, the evidence in the four-volume U.S. Senate Committee on Finance Hearings on the Sale of Foreign Bonds. We went back to this source. Finally, fees for modern times are available in Dealogic's Bondware.

Bond Prices

Bond price series used in Section V are the same as in Flandreau and Flores (2009). They provide a detailed description of the material.

Appendix B

Spreads and Fees

In this appendix, we discuss factors that determine the fee collected by an underwriter in the event of full underwriting. Our goal is to demonstrate that fees are an increasing function of risk and thus, since spreads measure risk, of spreads. For this purpose, we consider a government facing an underwriting industry that is made of competitive, risk-neutral, firms. We call p the "shadow" price that would be expected to prevail on the issue date if the issue was taking place directly on the market. The shadow price may be thought of as an indicator of

liquidity. An adverse liquidity shock on the day of the issue would force the government to sell the bond at a discount, whereas a favorable one would yield a premium. Calling u a random shock with a uniform distribution $[-a, a]$ such that $E(u) = 0$ (with $0 \leq a \leq 1$), we write without loss of generality,

$$p = 1 + u.$$

The problem at hand is to determine, given the issue price p_E, the price at which the underwriting syndicate purchases the bond from the government, or $p_A = p_A(p_E, a)$. Suppose that at the date of the issue the shadow price is above the issue price. Then investors will want to subscribe to the bond, and the issue is entirely sold to the market. The bank having purchased the bond from the government at p_A resells it to the public at p_E and makes a gain of $p_E - p_A$ per share. If by contrast the shadow price is below the issue price, nobody will want to purchase the bond and the bank makes either a gain or a loss, depending on the sign of $p - p_A$. Because of the risk of losing money if the issue turns awry, the bank will accept to buy the bond from the government only at a price that is sufficiently low so that the gains in the favorable states of nature compensate the losses incurred in unfavorable ones.[39]

In this setting, two critical assumptions help determine p_A. First, risk neutrality ensures that a bank is happy with a compensation that is just equal to the average loss she expects to make in unfavorable states of nature. Second, the competitive structure of the industry ensures that she will not ask for a higher compensation than the one that offsets its expected losses (otherwise the government will turn to another bank).

As implied from what we already stated, the bank will gain $p_E - p_A$ if $u \geq p_E - 1$ and will gain/lose $p^i - p^i_A = 1 + u^i - p^i_A$ if $-a \leq u < p_E - 1$. The expected gain G from underwriting the bond issue is

$$G = (p^i_E - p^i_A) \cdot \left[\frac{a^i - (p^i_E - 1)}{2a^i} \right] + \frac{1}{2a^i} \int_{-a^i}^{p^i_E - 1} (1 + u^i - p^i_A) du^i.$$

The zero profit condition tying p_E and p_A together, given a, is thus

$$(p_E - p_A) \cdot (a - p_E + 1) + \tfrac{1}{2} \cdot \left[(p_E - 1)^2 - a^2 \right] + \left[(1 - p_A) \cdot (p_E - 1 + a) \right] = 0.$$

This equation determines p_A as an implicit function of p_E. In a more general approach, it would be interesting to treat p_E as endogenous as well and derive both prices as model solutions. However, since the basic property considered here obtains for any p_E, it is just as good to focus on

the determination of p_A only. For simplicity, therefore, and in line with the discussion above, we assume that the underwriting syndicate marks the issue to market and sets the issue price at the expected shadow price on the day of the issue. Therefore,

$$p_E^i = 1.$$

Substituting this in the previous equation, we then get simply

$$p_A^i = 1 - \frac{a^i}{4}$$

and the underwriting fee

$$p_E^i - p_A^i = \frac{a^i}{4}.$$

This shows that the larger the variance of the expected liquidity shock on the market for bond i (or identically the more volatile the price of bond i), the larger the "haircut" that a competitive risk-neutral bank will require in order to underwrite the issue of that bond. If volatility is maximum ($a^i = 1$), banks accept government bonds only at 75% of their issue price. By contrast, if there is no volatility ($a^i = 0$), banks take the bonds from the government at the very price at which they resell them to the public and the underwriting fee is zero. The important point here is that the fee charged for full underwriting must be an increasing function of the risk of the bond.

Appendix C

Table C1
Keys for Granularity

Moody's Rating Scale, 1920–30	Moody's Rating Scale, 1993–2007
Investment grade:	
Aaa	Aaa
Aa	Aa1
	Aa2
	Aa3
A	A1
	A2
	A3
Baa	Baa1
	Baa2
	Baa3
	(continued)

Table C1
Continued

Moody's Rating Scale, 1920–30	Moody's Rating Scale, 1993–2007
Speculative grade:	
Ba	Ba1
	Ba2
	Ba3
B	B1
	B2
	B3
Caa	Caa1
	Caa2
	Caa3
Ca	Ca
C	C

Source: Authors, from Moody's manuals.

Endnotes

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1. The most significant contributions include Bordo and Murshid (2000), Kaminsky and Reinhart (2000), Mauro et al. (2002, 2006), Neal and Weidenmier (2002), Kaminsky, Reinhart, and Végh (2003), and Flandreau and Flores (2009).

2. See also Winkler (1933) and Flandreau, Gaillard, and Packer (2009) for the emergence of ratings in the interwar period.

3. See Flandreau, Le Cacheux, and Zumer (1998) for an early contribution. Subsequent works include Flandreau and Zumer (2004) and Mauro et al. (2006).

4. See Bordo, Edelstein, and Rockoff (1999) and Flandreau and Zumer (2004) for dissenting views.

5. See Flandreau and Zumer (2004) for the late nineteenth century and Reinhart and Rogoff (2009) for longer time periods.

6. See Eichengreen and Mody (1998), Grigorian (2003), Gelos, Sahay, and Sandleris (2004), and Fostel and Kaminsky (2007). Other papers relate to (mostly descriptive) aspects of issuing costs for certain countries (see Zervos 2004).

7. "Original sin" refers to the observed tendency to denominate external debt in foreign currency (see Eichengreen and Hausman 2005). For historical aspects of the matter, see Flandreau and Sussman (2005).

8. See Eichengreen and Mody (2000), Becker, Richards, and Thaicharoen (2003), and Gugiatti and Richards (2003) for different perspectives.

9. Jenks (1927), Landes (1958), and Gille (1965, 1967) provide classic accounts.

10. See Lewis (1938). Roberts (1992) describes how certain London houses opened shops in New York to remain in the game.

11. We leave out the experience with syndicated lending, which was very different from present and earlier arrangements since it served to allocate bank debt and thus differs radically from the "originate and distribute" setup. In particular, this market involved international financial institutions that were all "informed" and kept the credits on their books.

12. Appendix A gives a description of data sources.

13. More precisely, we focus on securities that are taken into account for league table purposes. See *Bloomberg Markets* (2006).

14. See Mauro et al. (2006) for a study that proceeds in this spirit.

15. See, e.g., Goldfajn and Valdes (1997), Berg and Pattillo (1998), Corsetti, Pesenti, and Roubini (1998), Demirgüç-Kunt and Detragiache (1998, 1999), Kaminsky (1998), Kaminsky and Reinhart (1999), and Goldstein, Reinhart, and Kaminsky (2000). In a recent addition to this literature, Nieto-Parra (2009) shows that fees paid to underwriting banks have an explanatory power for predicting sovereign crises.

16. For empirical evidence on this argument, which has often been mentioned (see, e.g., Calvo 1998), see Kaminsky and Reinhart (2000) and Van Rijckeghem and Weder (2003).

17. A related question was considered by Mintz (1951), who emphasized heterogeneity in default rates during the interwar period.

18. Defaults reached close to 40% in the three episodes. They are close to 10% for the modern era. Computations by Reinhart and Rogoff (2009) suggest that the selected episodes were the most violent in history.

19. Given the sheer difference in the size of the populations (the number of observations for 1820 is 23; for the 1850s–70s, 180; for the 1920s, 124; and for now, 1,442), straight comparison of chi-square is not adequate. Cramér's V controls for that by dividing by the number of observations and tests the strength of the association between the defaults and intermediaries. For 1820, Cramér's V equals .93; for the 1850s–70s, .73; and for the 1920s, .69. These numbers (above .7) are conventionally interpreted as revealing strong association (here between default and underwriters). By contrast, we find that the V for now equals .20. A value between zero and .25 is usually interpreted as indicating a nonexistent to weak association.

20. We are aware that default does not mean irrecoverable capital losses as previous research has demonstrated. Yet it provides a simple, straightforward way to capture the number of "problem cases" and is thus a valid indicator of performance.

21. For instance, JP Morgan told us that "everything is best efforts, rarely a firm commitment. Best efforts is the standard." Moreover, according to Lehman Bros., "banks would never put up capital to buy a whole deal. You are not really paid to take that risk today … hence best efforts being the main vehicle for underwriting, not firm underwriting."

22. The limited role of the bank in the sale on commission is described in the following way by White (of Barings) examined by the Select Committee: "Q 64: What is it that you do for that; what is it you are bound to do for that commission?—We are bound to make all the arrangements for issuing the loan. Q 65: What sort of arrangements; suppose the agreement made, what do you do?—We examine all the documents, and prepare the prospectus, and invite subscriptions for the loan; then we issue scrip for the loan, then receive the proceeds generally by various instalments [sic]; and when all this is completed we receive the bonds and countersign them, and issue them to the public" (Great Britain. House of Commons 1875, 3).

23. For a model studying the trade-off between underwriting share and commissions, see Flores (2007).

24. The committee was concerned with the way information about underwriters of the loan would be conveyed to the market. "Will you tell me, please, would that prospectus show the contractors for the loan; assuming Messrs. Baring to have contracted with the Russian government, or any other Government, would their name appear as contractors

upon the prospectus?—Yes. But in many cases loans are issued simply by the firm in London as agents for the Government and not as contractors for the loan. Most generally loans are issued by the firm in London as agents for the Government" (Great Britain. House of Commons 1875, 2). At a later stage of the interview White added that he knew of only "one instance of a loan which has come under [his] control which was not issued on commission."

25. Specifically, we have tried to identify the charges that were paid in the cases in which the alternative system was chosen. While we have no evidence of a modern contract with full underwriting, there are cases of best-effort contracts in the past. First we have the Barings contracts already alluded to. Next we have contracts that coincide with "conversions" (whereby debts were swapped against new ones with lower yields). Underwriters bore no substantial risk (although unhappy investors could in principle ask for a refund) but had to prepare the market, talk to investors, explain the particulars of the new bond, etc., somewhat like what underwriters do under "best efforts." Another way to measure the value of distribution is to split when this is feasible the distribution (or placement) fee from the underwriting fee.

26. Interpreting the underwriting service for the issuer as an insurance premium, app. B shows that under firm commitment contracts, fees are an increasing function of spreads.

27. Note that recent research provides conflicting results on the modern relation between fees and yields. Amira (2004) finds such an association for (corporate) Eurobonds. Nieto-Parra (2009) reports weak evidence of this correlation for modern emerging market sovereign debt.

28. Consider the following excerpt from the prospectus of a Brazilian bond (10.5% Global Bonds Due 2014) issued in July 2004: "No assurance can be given as to the liquidity of the trading market for the global bonds." Some interviewees reported that this service is related to the fee paid to the underwriter and to the underwriter's willingness to acquire a reputation as a good supporter, increasing the likelihood of securing future contracts.

29. This is unlike the underwriting services occasionally provided to emerging government bonds by multilateral organizations, such as the World Bank or the Andean Development Corporation, which do include commitments.

30. Members of syndicates, underwriters, and brokers were said to engage in the promotion of similar bonds by forward market operations in order to whet the appetite of investors. This practice, called "market rigging," has often been frowned on (Great Britain. House of Commons 1875; Lysis 1908; Jenks 1927, 276–78; Benston 1990).

31. See White's testimony before the Select Committee (Great Britain. House of Commons 1875, 1 ff). This allegation does not stand against powerful evidence from Barings' own archive (Ziegler 1988; Flores 2004).

32. Turnover is measured as the sum of underwriter switches divided by the number of issues. Where there are multiple underwriters, if any one of the underwriters from the previous issue is among the underwriters for the current issue, we do not consider this event as a switch. Because (as the next section will show) countries used to access markets with longer-term securities than today and thus less frequently, the interwar period with its short boom and bust record is not a good benchmark, and we have preferred using the last two periods of the nineteenth century (London market), for which a long track record (and thus reliable turnover rates) can be constructed (1877–1914).

33. Conversions are based on the CPI. The year used is midperiod except for the first era, for which 1830 was chosen. Conversions were performed using the "measuring worth" facility provided on http://eh.net/, the Economic History Association official Web site. The site provides conversions for both sterling and U.S. dollars. French francs were first converted to dollars at the (fixed) exchange rate that prevailed at the time (gold standard).

34. Actual redemption could be shorter, and as we already discussed, it was standard practice for loan contracts to contain covenants permitting reimbursement or conversion before maturity.

35. In the interwar period, the cutoff was Baa/Ba. Today it is Baa3/Ba1 (Moody's). See Flandreau et al. (2009).

36. See Flandreau et al. (2009) for historical details. The recent past has seen rating agencies becoming important agents in new bond offerings. While their participation is not strictly needed in a legal sense, domestic or international prudential regulation, which do rely on ratings and place limits on the purchase of unrated securities, make them necessary.

For instance, the Basel II regulatory framework penalizes unrated securities (Basel Committee on Banking Supervision 2005).

37. It covers securities sold in the official market, where most government securities were transacted.

38. The database is available at http://profesores.utdt.edu/~fsturzen/Publications.htm. To make sure that we were not losing any of the many bonds defaulted on by Argentina in 2001 (Porzecanski 2005), we also considered a database provided by the Ministry of Finance of Argentina (http://www.mecon.gov.ar/finanzas/download/anexo_comunicado_prensa .pdf) as well as material provided by the Argentine Bond Restructuring Agency (http:// www.hypovereinsbank.de/media/pdf/Wertpapierliste.pdf).

39. For simplicity, we consider that a shadow price exactly equal to the issue price means a success. In practice, transaction costs (agents have to switch from identical assets to purchase the new one) imply that the issue will succeed only if the issue price is marginally below the shadow price so that investors are compensated for the expenses they face in reallocating portfolios.

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