The Default Puzzle: Underwriters and Sovereign Bond Markets 1815-2007[♣]

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Abstract

We provide a comparison of salient organizational features of primary markets for foreign government debt over the very long run. We focus on output, quality control, information provision, competition, pricing, charging and signaling. We find that the market set up experienced a radical transformation in the recent period and interpret this as resulting from the rise of liability insurance provided by rating agencies. Underwriters have given up their former role as gatekeepers of liquidity and certification agencies to become aggressive competitors in a new speculative grade market.

Keywords: certification, primary bond market, sovereign debt crises, banks competition

JEL Classification: F34, G14, G24, N2

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Wow. I hadn't thought of it through a historical perspective.
John Grisham, *The Partner*, 1997, p. 452.

In the past twenty years dedicated research efforts have helped us expand our knowledge of the operation of the international financial system. Because the emergence of global finance is really re-emergence, a large fraction of this research has been devoted to understanding previous regimes and experiences in relation to modern ones. While matters are hardly settled and controversy is vibrant there is at least now a body of literature to which we can turn. As a result of these massive investments, we know much more about the record of international debt than we did thirty years ago. We have acquired knowledge on how previous bondholders have fared.[1] We have acquired knowledge on debt crises and bond prices volatility.[2] We have acquired knowledge on contagion in the very long run.[3] We have acquired knowledge on the incidence of collective action institutions on recovery rates.[4] We have acquired knowledge on the reasons for historical reliance of foreign currency debt despite the vulnerability this may entail.[5] We have acquired knowledge on the factors that affected countries' reputation now and then.[6] We have acquired knowledge on the historical determinants of sovereign bond prices in secondary international capital markets.[7] We have acquired knowledge on the historical incidence of exchange rate regimes on credibility – or lack thereof.[8] Last, we have acquired much better statistical knowledge on the long run evolution of government debts, domestic and foreign, which both mattered.[9]

One area however has been under-researched in comparison. It pertains to 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.[10] Yet the nuts and bolts of their

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[1] . Eichengreen and Portes (1986); Lindert and Morton (1989).
[2] . Bordo, Eichengreen, Klingebiel and Martinez-Peria (2001), Mauro, Sussman and Yafeh (2006).
[3] . The most significant contributions include Bordo and Murshid (2000) and (2002), Kaminsky and Reinhart (2000), Kaminsky, Reinhart and Végh (2003), Mauro, Sussman and Yafeh (2002) and (2006), Neal and Weidenmier (2002), and Flandreau and Flores (2009).
[4] . Eichengreen and Portes (1989).
[5] . Flandreau and Sussman (2005).
[6] . Flandreau (2003); Tomz (2007). See also Flandreau, Gaillard and Packer (2009) for the emergence of ratings in the interwar.
[7] . See Flandreau, Le Cacheux and Zumer (1998) for an early contribution. Subsequent works include Flandreau and Zumer (2004) and Mauro, Sussman and Yafeh (2006).
[8] . See Bordo, Edelstein and Rockoff (1999) and Flandreau and Zumer (2004) for dissenting views.
[9] . Flandreau and Zumer (2004) for the late 19th century and Reinhart and Rogoff (2009) for longer time periods.
[10] . Eichengreen and Mody (1998); Grigorian (2003); Gelos, Sahay and Sandleris (2004); Fostel and Kaminsky, (2007). Other papers relate to (mostly descriptive) aspects of issuing costs for certain countries (see Zervos, 2004).

operation are usually neglected despite some occasional outburst of interest for certain special feature with policy relevance. A prominent example has been earlier research on the causes and consequences of the so-called original sin phenomenon.[11] The relevance of some more arcane aspects of debt issuance has also been acknowledged. We have in mind studies on the incidence of certain covenants such as Collective Action Clauses on bond prices.[12]

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 organizing the output according to the identity of the underwriter, we find that defaults are today randomly distributed across underwriters. But they were not in the past. This is what we call the default puzzle.

Resolution of this puzzle requires introducing in the discussion insights from banking theory. Our interpretation hinges on the effects of brand or charter value on intermediaries' risk taking. In a world of serious asymmetries of information (as we suggested prevailed until the interwar period) underwriters provided valuable certification services. They tried to secure prestige by convincing investors their name, or brand, was associated with safer products. The reason why they did this was not honesty, altruism or self-esteem, but because this entailed benefits.

This time is different. 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.[13] Development of alternative certifying mechanisms has enabled underwriters to defray liability risks. As a result, banks can market riskier securities because they can escape liability from having sold bad products. It worked: for instance, academic economists have been willing to blame the agencies.[14] Rating agencies thus act as a lightning rod in financial storms. We suggest that this situation has given birth to a "new" market for riskier securities, which did not exist in the past. We conclude that this time is much worse than anything that existed before as far as risk taking is concerned. The next sovereign debt Tsunami will run on a foreign currency debt market that is by design more

[11] . "Original sin" refers to the observed tendency to denominate external debt in foreign currency (see Eichengreen and Hausman 2005).
[12] . See Eichengreen and Mody (2000); Gugiatti and Richards (2003) and Becker, Richards and Thaicharoen (2003) for different perspectives.
[13] . For instance, the Basel II regulatory framework penalizes unrated securities (BIS 2005).
[14] . Reisen and Von Maltzan (1999); Ferri, Liu and Stiglitz (1999).

fragile and crisis prone than predecessors. Whether we hold adequate tools to tackle it remains to be seen.

To support these claims, we marshal a large amount of new data. Unlike important and ambitious previous works we draw not only on published sources but on archives as well. We have also performed interviews. This reliance on primary evidence (archives and interviews) is required 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 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 irresponsive to bond spreads now), on the quality standards that market leaders applied (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 remainder of the paper is organized as follows. Section I presents the data, the puzzle and a sketch of the argument. The other 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 relation between underwriters' brand value and risk taking. Section V provides evidence on the link between underwriting and contagion. 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. We end with conclusions.

Section I. The Default Puzzle

Background and data

In the 19th century, lending to foreign governments occurred through the agency of originating houses located in the leading financial markets of the time. Since 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 towards the late 19th

century.[15] During the interwar period, the center of the world financial system partly shifted to New York and government securities followed.[16] After an extended period of suspension coinciding with the period between the bonded debt collapse of the interwar and the banking debt debacle of the early 1980s, this market has been reinvented along lines, which at first sight appear broadly similar. This market relies on international securities originated and distributed by investment banks. This market has prospered since then. The emerging markets crises of the 1990s and their boom during the period 2002-2007 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 sub-prime crisis and global recession and high CDS premia.

In what follows, we deal with foreign government debt issued in leading financial centres in the past 200 years. Our database comprises issues of foreign governments' debts since the beginning of the 19th century. We look at the London (1818-1914), Paris (1882-1914) and New York (1920-1930). We look at the foreign government debts placed abroad of "emerging" and "transition" countries during the "present" era (1993-2007). Our data is not a series of "samples" but rather as far as possible, the documented population of issues.[17] The historical material is constructed from listings of securities issued in the relevant markets, 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.[18]

One issue that arises is the comparability of "emerging" and "transition" governments over time. Previous research has generally brushed this issue away and considered that 19th century borrowers such as Denmark, Sweden or Canada are adequate counterparts for modern emerging countries.[19] Such an assumption may be questioned.[20] Because colonies were really sub-sovereign entities, they have been excluded from this study and our focus is on sovereign emerging and transition now and sovereign borrowing in foreign currency then. On the other hand a strict comparability may have required adding more well-behaved countries in the modern dataset than we do.

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[15] . Jenks (1927), Landes (1958) and Gille (1965) and (1967) provide classic accounts.
[16] . Lewis (1938). Roberts (1992) describes how certain London houses opened shops in New York to remain in the game.
[17] . Appendix 1 gives description of data sources.
[18] . More precisely, we focus on securities that are taking into account for league table purposes. See Bloomberg Markets (2006).
[19] . See Mauro, Sussman and Yafeh (2006) for a study that proceeds in this spirit.
[20] . See Accominotti et al. (2008).

Our logic is market based not fundamentals based (the latter would be quite impossible to implement). In other words, we compare market to market. To the extent that producers of League Tables and market participants describe emerging and transition countries debt as forming a market, it is natural to try and match it against a historical counterparts. Previous periods did not recognize such differences and looked at the foreign currency government bond markets as a whole: the fact is that it 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 19th 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 about transformations in the low risk category.

The chronology we focus on does capture the successive waves of sovereign debt issues that have taken place since the 1820s. We identify six. Historians have shown that the first five were terminated in more or less abrupt ways: The early 19th century (1818-1829), the mid-19th century episode (1845-1876), the 1880s (1877-1895), the pre-WWI period (sometimes inappropriately called the "first era of globalization"), the 1920s (1920-1930) and finally the modern era (1993-2007). Three of these waves (the 1820s, the mid-19th century, and the interwar period) were terminated by massive failures. Because of this, they will receive more detailed attention. In the rest of the paper these periods will be referred to either with the help of the time brackets listed above, or in short hand as then/early 19th, then/mid-19th, then/1880s, then/pre-WWI, then/interwar, and now, respectively.

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.[21] Previous authors identified defaulting patterns and coined the expression "serial defaulters" to designate recidivists.[22] We suggest here to take a different look. We bring a new dimension to the study and suggest looking at defaults conditional on the identity of underwriters. The importance of common lenders has been recognized in

[21] . See e.g. Goldstein, Reinhart, and Kaminsky (2000), Demirguc-Kunt and Detragiache (1999), Kaminsky and Reinhart (1999), Berg and Pattillo (1998), Corsetti, Pesenti, and Roubini (1998), Demirguc-Kunt and Detragiache (1998), Kaminsky (1998), Goldfajn and Valdes (1997). A recent addition to this literature is Nieto-Parra (2008) who shows that fees paid to underwriting banks have an explanatory power for predicting sovereign crises.

[22] . Reinhart and Rogoff (2004).

previous studies of contagion, who 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.[23] Our first question is to ask whether defaults across underwriters can be described as generated from a random draw or whether instead underwriters do or did specialize in certain kinds of securities.[24]

For this purpose we compare the distribution of defaults per underwriters during the modern era and earlier periods. A formal Chi-square based criterion is Cramér's V statistic (Kendall and Stuart, 1979). We computed it for three selected episodes of major sovereign debt distress (the 1820s, 1870s and 1930s) and compared with today.[25] Results shows there used to be a clustering of defaults with certain intermediaries in the past (for all historical periods) while they are now randomly distributed.[26] This intriguing result means that in the past, the identity of underwriters provided information on the likelihood of future defaults. Equivalently intriguing is that this is no longer true. We call these curious findings the default puzzle.

Suggested Resolution

Can we make sense of the above evidence? In this section we provide a sketch of our suggested solution. 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 in the classic paper by Diamond (1989) on the importance of repeat play in sustaining credibility. Since repeat play alone cannot sustain sovereign debt, Flandreau and Flores (2009) interact it with underwriters' monopoly power. The intuition is related to Chemmanur and Fulghieri (1994) who develop a relevant model in which financial intermediaries' reputation for veracity mitigates the moral hazard problem in information production. Prestigious underwriters who might be tempted to overprice securities in order to

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[23] . 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).

[24] . A related question was considered by Mintz (1951) who emphasized heterogeneity in default rates during the interwar.

[25] . Defaults reached close to 40% in the three episodes. They are close to 10% for the modern era. The proportion may rise substantially in the near future if we are believe current CDS premia for some emerging countries. Computations by Reinhart and Rogoff (2009) suggest that the selected episodes were the most violent in history.

[26] . Given the sheer difference in the size of the two populations (the number of observations for the 1820=23. 1870s=180. 1930s=124. Now=1442), straight comparison of Chi-square is not adequate. Cramér's V controls for that by dividing with number of observations and tests the strength of the association between the defaults and intermediaries. For the 1820, Cramér's V=.93. 1870s=.73. 1930s=.69. These numbers (above .7) are conventionally interpreted as revealing strong association (here between default and underwriters). By contrast, we find Now=.20. A value between 0 to .25 is usually interpreted as indicating a non-existent to weak association.

generate short-term gains do not 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. Beatty and Ritter (1986) also show that underwriters whose offerings under-perform lose market share. Market share emerges as the endogenous solution to pre-commitment and credibility problems. As a result, natural monopoly emerges as a separating equilibrium in which quality, commitment, performance, and monopoly power are related to one another.

To see how these insights provide a way to think about the default puzzle, compare the two following regimes. In the first regime there are asymmetries of information between investors and intermediaries. Investors do not know how good various government securities are. Intermediaries by contrast have that information. We argue that this coincides with the earlier times. In the second regime there are no asymmetries of information. This occurs because country grades are provided at zero cost by a rating agency that is been established as a standard of reliability.[27] Each country's quality or "grade" is common knowledge. We argue that this coincides with the modern period, because ratings have now become part of the certified regulatory and monitoring infrastructure, a role that they did not have in the more distant past as it only grew long after the interwar debt crisis.[28]

We argue that intermediaries' behavior will vary between 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. This can be used to attract the best borrowers and retain the initial monopoly position. Therefore we expect such a regime to display monopoly power, strong relationships between top underwriters and issuers, cherry picking by the best underwriters, and finally a tendency for lower grade securities to have a weak capacity to attract investors. This is because the market for speculative bonds is operated by those underwriters with the weakest ability to certify.

In the second regime, availability of common knowledge certification reduces revenues from underwriter certification. If everybody knows the "true worth" of a security, the marginal benefit of additional signals declines. We expect financial intermediaries to compete more aggressively for risky securities. Underwriters make more indiscriminate choices when picking securities. In the end if certification has been delegated to rating agencies,

[27] . Introducing the possibility of information manipulation by the rating agency would open new interesting research insights, which we will ignore for simplicity.
[28] . See Flandreau, Gaillard and Packer (2009) for details

underwriters escape liability risks. Investors are now told about the risks and encouraged to diversify it away. The result is the emergence of a "market for lemons".

Section II. Market Power

Our view that earlier regimes rested on underwriters based certification implies we ought to observe more market power in earlier periods. In Table 1, we organize some hard evidence on the degree of competition that prevailed during successive episodes. Working with the sources described in the appendix, we constructed new statistical measures of market power. The first measure we discuss is the Herfindahl-Hirschman Index. Recall that an index below 1000 is associated with an un-concentrated market. Between 1000 and 1800 it is a moderately concentrated market. Above 1800, the market is highly concentrated. The second measure is the market share of the top three underwriters.

Table 1 shows the H-H index fluctuated over time but the overall degree of concentration was typically higher during earlier periods. The highest degree of concentration is for the mid 19th century, interwar and late 19th century Paris market (close or above 1800). Computation for the early period (1820s) also reveals that concentration was very substantial (H-H index of 1667). Concentration for the 1880s and pre-WWI period was more moderate (1200 and 1270 respectively). The lowest degree of concentration is obtained for the modern period (New York and London) for which indices are slightly above or below 1000, with an aggregate concentration of 840 only.

We also computed market shares for the top three underwriters. Again, we find that the top three underwriters always controlled more than 50% of the market in historical time periods while this proportion is now below 50%. Peaks correspond to the early 19th century (London) late 19th 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). So again market power is substantially lower today.

Finally, Figure 1 (a to e) ranks underwriters' market shares in various episodes. A striking feature is the decline over time of the leader's share, and the reduced difference now between the leader and her immediate followers. In the 1820s, Rothschild had 40.8% of the amounts loaned in London while the next intermediary (B. A. Goldschmidt) had 23.6%. During the interwar, JP Morgan concentrated 50.8% % of the New York market while the next best (National City) had 9.9%. JP Morgan still leads the New York market now, but with 20.8% only and the next best (Citi) is close behind with 15%. The market for underwriting foreign

government debts was highly concentrated until the interwar, but has become much more competitive as of late.

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

We now examine two more predictions of our theory. First, if prestigious underwriters did worry about retaining market share but do not today, we should observe that they used to "cherry pick" better securities and are much less discriminating today. Evidence of this is provided in Figure 2. It compares the ex ante quality of the portfolio of securities underwritten by the leading intermediary with the portfolio of the other firms. "Quality" is measured using spreads. Evidence from ratings when they are available provides similar results. As can be seen, a striking difference between then and now is that we do not observe quality difference between the securities brought ought by the leader and those marketed by other firms. By contrast, earlier periods saw the market leader specializing in top-of-the-shelf securities: cherry-picking evaporated.

The other test we consider looks at ex post results. Suppose serious underwriters make careful choices to protect market shares. We should expect problems (measured here by default events) to concentrate within the lower end comprising less prestigious houses, which are also the ones with the smallest market shares.[29] A convenient tool to capture this is to construct "Lorenz curves" of underwriters' performance. Ranking intermediaries' market shares from the smallest (small prestige) to the highest (high prestige) and plotting the cumulated share of underwriters' securities in default (in the total amount in default) helps study underwriters' risk taking. To see this let us define (x_k, d_k) the pair formed by the amount underwritten by bank k (x_k) and the defaulted amount previously underwritten by bank k (d_k). Indices k are set by ranking banks according to size in underwriting:

$$x_1 < ... < x_k < ... < x_n \qquad (1)$$

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

$$X_k = \frac{\sum_{i=1}^{k} x_i}{\sum_{i=1}^{n} x_i} \qquad (2)$$

[29] . 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.

The cumulated default share D_k for banks with smaller market shares than *k* is :

$$D_k = \frac{\sum_{i=1}^{k} d_i}{\sum_{i=1}^{n} d_i} \qquad (3)$$

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

Suppose now 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; combined with the next larger who has say 10% of the market, they will get about 15% of the defaults, and so on. The resulting Lorenz curve should therefore be close to the 45° line. Suppose by contrast that prestige does confer a larger market share but requires to market good securities only (otherwise prestige would be lost). In this case the smallest (less prestigious) underwriter with 5% of the securities underwritten will have much more than 5% of the defaults (say 20%). By contrast the largest (most prestigious) underwriter with say 20% of the securities underwritten will have say, only 5% of the defaults. The resulting Lorenz curve should therefore be concave.

To test for this we consider four episodes (Figure 3). As before, the "past", is represented by the three most violent historical debt crises in history (1820s, 1844-75 and 1920-30). We compare this with the modern period. We find the three historical episodes to be associated with strong concavity of Lorenz curves. This contrasts with the modern set up for which the Lorenz curve essentially overlaps with the 45° line. This is consistent with our view that the reason why default was not distributed randomly in the past while it is now is because underwriters used to make careful choices.

Section 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 more risks aboard and required substantially larger fees than they do now. To show this we first summarize qualitative evidence we obtained from examining a large number of early underwriting contracts and interviewing modern market participants, then move to provide new data on the long run evolution of underwriting fees.

Underwriting contracts, past and present

Today, a key aspect of an 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 selling many bonds as possible but does not bind itself to acquire any if there are no 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.[30]

In the past, the contract signed between governments and underwriters was also a central part of the process and we have examined many. Like today, the main alternative was between having the underwriter as mere distributor of the bond or full insurer of the success of the issue. The former arrangement was known as "sale on commission" and the second as "firm taking". These are equivalent to the modern best efforts and firm commitment systems: With sale on commission, underwriters received subscriptions for the purchase of bonds but took no liability in the result of the issue.[31] 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.[32]

From the contracts we could examine, we found 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 was observed. It is fair to say that by the end of the 19th century, full or quasi-full underwriting had become a kind of more or less absolute norm. There were some exceptions however. We found that Barings initially favored sales on commission. Testifying in 1875, one Baring employee drew a sharp contrast between issues

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[30] . For instance JP Morgan told us "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, enough to make a firm underwriting. You are not really paid to take that risk today".

[31] . 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" (Select Committee, p. 3).

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

where they acted as genuine "contractors" (underwriting the issue) and issues where they would be mere "agents" (only placing the loan in the market) adding that "most generally loans are issued by the firm [i.e. the Barings] in London as *agents* for the Government" (Select Committee, p. 1: our italics).[33] This declaration is consistent with the actual Baring contracts we could inspect. Over time, however, even the Barings moved to full underwriting.

The same pattern (i.e. predominance of the full underwriting contract) does apply for the interwar period as well. The Senate Committee hearings provide much evidence that this was the case in the New York market during the interwar period. British bankers examined before the Macmillan Committee in 1931 also emphasized it. Sir Kindersley (of Lazard) made a distinction between a "bank" or mere distributing institution and a "issuing house" or genuine originator and underwriter and 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".[34] 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.

Fees and risk taking

Can we provide some numbers to match our suggestions from qualitative evidence? Table 2 gives ranges for fees. Sources (archival or other) are indicated in footnotes. The first two columns report the proportion between fees and spreads for the sub-sample of securities for which we do have material. This ratio is computed for the dominant underwriting pattern (best effort for the modern period and full underwriting for earlier times). The Table does support notions that emerged from earlier discussion. The ratio between fees and spreads used to be much larger in the past. It has massively declined in more 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 making modern underwriting more efficient. We are skeptical of this, however. Most of the revenues from

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[33] . 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". 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" (p. 2).

[34] . Our italics. *Macmillan Report*, Minutes of evidence, p. 77-8.

underwriting must come from the risks involved (captured by underlying volatility) for which division by spreads controls. But to address this concern, Table 2 also decomposes the available evidence, reporting minimum, maximum and average fees according to alternative underwriting regimes.[35] We find that earlier times' best efforts charges were not very different from modern ones. While they were somewhat larger on average, they 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 underwriting services now. 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. As said, under firm commitment, the intermediary takes all the risk of the issue and this risk is related to the volatility of the bond.[36] We should thus expect a stronger association between spreads and fees in the past than now.[37] Results are shown in Table 3. We find substantially higher correlation coefficients in the past. Another test in Table 3 provides a way to examine the significance and sensitivity of fees to spreads under different regimes. We run a simple OLS regression of fees on spreads, plus a constant. We find higher significance and sensitivity, higher R2's as well, in the past. This is consistent with a bigger pass-through of country risk into underwriting fees and again indicates less risk taking by financial intermediaries today. This is consistent with our story.

Section V. The Evolution of Contagion

Another implication of our analysis is that serious underwriters ought to take special care to make sure that their sponsored issues turn well, because their reputation is at stake. 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. One is to look at whether banks are involved in secondary markets. Brand conscious underwriters ought to worry about excess volatility or

[35] . Specifically, we have tried to identify the charges that were paid in the cases when the alternative system was chosen. While we have no evidence of modern contract with full underwriting, there are some 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) part from the underwriting contract.

[36] . Interpreting the underwriting service for the issuer as an insurance premium, Appendix 2 shows that under firm commitment contracts, fees are an increasing function of spreads.

[37] . 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 (2008) reports weak evidence of this correlation for modern emerging market sovereign debt.

contagion spilling over to "their" securities. Accordingly they should intervene to prevent such events.

Interviews with modern bankers suggested that today underwriters offer some partial participation in the secondary market. However, the underwriter is typically not obliged to make a secondary market for the bonds, consistently with best effort contracts.[38] The responsibility of underwriters is thus limited to place the bonds in the market and make an effort to stabilize the price of the bonds in the secondary market during an unspecified time. It is never understood that the underwriter should act as lender of last resort of the bonds issued by governments.[39]

In previous eras, underwriters frequently engaged in market operation to support the government bonds they were issuing and these purchases went way 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 and they could be in some cases.[40] As a result, bankers sometimes denied they were involved in such schemes.[41] However leading houses acknowledged their role as lender of last resort. Rothschild's testimony before the Select Committee is an example.[42] 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) testimony before the Senate Committee in 1931 recognized 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

[38] . Consider the following excerpt from the prospectus of a Brazilian loan issued in 2004: "No assurance can be given as to the liquidity of the trading market for the global bonds". Prospectus supplement of US$750,000,000. Federative Republic of Brazil. 10.5% Global Bonds Due 2014. July 7, 2004. 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 to secure future contracts

[39] . This is unlike the underwriting services occasionally provided to emerging government bonds by multilateral organizations, such as the World Bank (WB) or the Andean Development Corporation (CAF) who do include commitments.

[40] . 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" in the US, has often been frowned upon (Select Committee 1875, Jenks 1927: p. 276-8, Lysis 1908, Benston 1990).

[41] . An illustration is one Baring employee's testimony before the Select Committee Select Committee, p. 1 ff. This allegation does not stand against powerful evidence from Barings' own archive (Ziegler 1988, Flores 2004).

[42] . Select Committee, p. 267. See also Flandreau and Flores (2009).

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".[43]

Table 4 reports relevant data to bear upon this issue. Namely we have organized figures on past and present markets looking at monthly bond spreads in sterling bonds (1820s) and USD bonds (now). To enable relation with earlier work, the measure of contagion we use is that of Mauro et al. (2006) who identify sharp changes in bond spreads (measured as either 200 b.p. jumps or 20% changes) and look at commonality of these sharp changes across countries. We see that jumps are more frequent today, and 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 has been 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 the market portfolio as we already reported. The "Non-Rothschild" and "Rothschild" columns drive our story home showing that all the contagion did cluster onto non-Rothschild securities. This we interpret as the combined effect of signalling of good securities by prestigious underwriters and underwriter's willingness to intervene to support "its" securities (to prevent deterioration of reputation). We conclude that good intermediaries were concerned with the performance of the securities they sponsored explaining why, in the absence of any contractual obligation, they nonetheless volunteered help. We see that this has been lost in today's markets. Our finding may go some way towards explaining the evolution of contagion over the long run.

Section VI. Turnover and Reputation

Another bit of evidence can be garnered by looking at turnover. The previous identification of a tendency for underwriters to band with issuers in previous eras should be reflected in some properties of turnover rates. Consider the following reasoning, applying to what we called the "past" regime: good issuers benefit from association with prestigious underwriters because such intermediaries are prepared to support them. Of course issuers get charged for this (we found higher fees then than now). Good issuers may want to bargain for better terms but on the other hand, going to lesser underwriters would make investors weary. And since by definition there are not many good underwriters turnover at the top should be small (if we consider that going down by more than one notch in the underwriting scale would entail

[43] . Senate Committee, p. 135.

reputational costs, the expected turnover is going to be limited to switching between the top two).. By contrast, lesser issuers have an incentive to shop around because prestigious underwriters do not want to deal with them and because the other mediocre underwriters are substitutes for one another. As a result a greater turnover ought to be expected at the bottom. The implication for this is that for the past period, we ought to observe a positive correlation between turnover and spreads at issue, other things being equal.

By contrast, we have found that the modern market is very competitive with all underwriters doing pretty much the same thing. The implication is that a) average turnover ought to be more substantial (all issuers shop for the best prices) and b) we ought not to observe any correlation between turnover and spreads. Thus we get two more testable propositions of our theory. They are examined in Figure 4 which correlates on a country basis country turnover and average spread at issue. The Figure also permits a visual location of the "average" turnover (between 0 and 100%). The periods chosen are the modern era and a longer chunk of time than in other tests (London 1877-1914). This is done in order to insure the statistical significance of turnover rates in the presence of less frequent market access then than now.[44]

The result is striking. First it is obvious from Figure 4 that the 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 obviously no such association for the modern period. This is another batch of results that are consistent with the predictions of our model.

Section VII. The Market for Lemons

The last proposition we examine is the following: if reduced asymmetries of information permits 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. While safer bonds that could make it to the market then should still be around now, riskier ones that

[44] . Turnover is measured as the sum of underwriter switches divided by the number of issues. Where there are multiple underwriters, if any of the underwriters from the past issue are 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 19th century (London market), for which a long track record (and thus reliable turnover rates) can be constructed (1877-1913).

had a harder time in the past are less penalized now and should feature more prominently. In other words, we argue that in the modern era a market for lemons is born.

To document this, Table 5 provides basic characteristics of the population of government securities that made their way to the market place at different time periods. We outline a number of basic measures. We report the number of securities that could be identified and then we give the number of countries that accessed the global capital market. The next column has data for the minimum, maximum and average size for the securities in the corresponding group and a conversion of these amounts in 2008 USD, using http://www.measuringworth.com/index.html to convert amounts.[45] We then report information on maturity and risk. Maturity is the time lag to the date of redemption as stated in the initial issuing documentation or the press.[46] Risk can be measured by looking at either yield premium at issue or rating at issue. Because rating agencies only started sovereign debt assessment after WWI, this measure is only available since the interwar period onwards.[47]

There are two features that emerge from the Table 5. The first is the shorter maturities in the modern period compared to earlier times. During the nineteenth century, average maturities lengthened gradually: they went from 31 (1818-29) to 33 (1845-76) to 47 (1877-1895) and finally 43 (pre-WWI). At about the same time (1880-1914) maturities were comparable in Paris (around 50 years). The interwar saw a substantial decline of maturities, but they were still above 25 years. This contrasts with the recent period, for which average maturities have been halved (NY) or divided by three (London). The modern average is below 10 years. This reduction in maturities 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). One possible interpretation of the evidence on maturities therefore, is that foreign debt is inherently riskier today than in the past.

The second intriguing fact has to do with 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 borrow short term due to the higher risk premium charged by international capital markets on long-

[45] . Conversions based on CPI. The year used is mid-period except for the first era for which 1830 was chosen. The Eh.Net site provides conversions for both sterling and USD. French francs were first converted in USD at the (fixed) exchange rate that prevailed at the time (gold standard).

[46] . Actual redemption could be shorter and as we already discussed it was standard practice for loans to contain covenants permitting reimbursement or conversion before maturity.

[47] . See Flandreau, Gaillard and Packer (2009).

term debt. As a result, counterfactual long term debt yield premia that would prevail if countries borrowed today as they did in the past might be higher than observed. 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 19th century, from 357 and 397 basis points (1820s and mid century) to 275 (1880s) and 215 (pre WWI), then rose again during the 20th century, standing at 291 in New York in the interwar and 364 for the same market in the modern period (average spread in London is 288 bps). Similar spreads associated substantially shorter maturities may thus be indicative of riskier debt.

Another piece of interesting information is provided by average ratings, which are indicated in Table 5 and detailed in Figure 5. To make comparisons across time periods possible, Figure 5 aggregates modern ratings to match earlier, coarser granularity (the appendix provides the details of how mapping modern ratings into earlier ones). Figure 5 outlines the Investment Grade/Speculative Grade cut off, which was already recognized in the interwar period.[48] As can be seen in Table 5, the average rating for foreign debt was above investment grade during the 1920s (or an average A), but it now squarely within speculative grade (an average BB for NY and BB+ for London). In Figure 5, we see that the speculative grade category was very narrow during the interwar while it is very broad today. In other words, a genuine liquid market for speculative grade government securities is born.

The message is that foreign government debt placed abroad was deemed significantly less risky in the past than it is now. There are of course many ways to account for this result. It can be that the appetite for risk increased over time. It can be that the to ability to diversify risk away has improved. It can be that the world was inherently safer in the past. It can be that liquidity improved in modern times.[49] All these reasons might be sufficient to explain what happened but are not necessary. We suggest that in the past reputable underwriters prevented riskier securities from reaching the market because of brand concerns.

Conclusion

In a nutshell, our finding is the following: Today, underwriting banks perform the limited function of "making the market" for the issuing government. In earlier periods by contrast, their counterparts provided their customers with a vast array of services, acting as broker, and certifier, and lender of last resort when issues failed. The result, we demonstrate, is

[48] . In the interwar, the cutoff was Baa/Ba. Today it is Baa3/Ba1 (Moody's). See Flandreau et al. (2009).
[49] . See Fostel and Kaminsky (2007) for a study that relates market access to global liquidity.

considerably bigger fees in the past (as a share of the amount issued). Today, certification is in large part provided by rating agencies. The implication of this is that today's debt 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 underwriting. They must rely on published hard information only. Should trouble come, underwriters have no reason to provide support and rating agencies have no means. In the past, the issuer-certifier saw the wisdom of nor jeopardizing reputation.

While this evolution has beneficial aspects (since it enables high-risk countries to borrow when they may have been rationed out in the past) we speculate that it has brought in 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 increased risk built into the system is manageable hinges critically upon the ability of investors to diversify. Yet whether diversification is feasible in the presence of large, correlated supply shocks is still to be seen. It is our contention therefore that this time is very different: it may, actually, be worse.

One pending question is why this transformation has occurred. 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 the sleeping beauty. When she woke up the world had changed a lot and one of the first things she saw was a rating agency. Indeed, a senior manager from Moody's shared with one of us his memories of how bond markets were restarted in the 1980's. He suggested that sovereign ratings had to be reinvented in a rush because they were critical for booking and marketing purposes. And since US banks were using Brady bonds to offload their balance-sheets from defaulted bank debt, they could hardly be credible certifiers of government securities.

In a recent noted piece of professional self-introspection Acemoglu (2009) writes that among the several notions he felt the sub-prime crisis had destroyed one was that "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' of this world – to monitor themselves and their own because they had accumulated sufficient reputation capital. Our faith in long-lived large organizations 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 does shed light on why such beliefs were found to be disappointing: we incorrectly hoped that the present would be more like the past.

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Table 1. Characteristics of primary markets

Period	Number of Underwriters	H-H Index	Market share Top Three (%)	Names of To Three
1818-1829	12	1667	64.6	Rothschild Thomas Wilson B.A. Goldschmidt
1845-1876	45	2315	55.2	Rothschild Imperial Ottoman Bank Bischoffsheim & Goldschmidt
1877-1895	34	1200	50.1	Rothschild Barings Hambros
1895-1913: London	33	1269	51.1	Hong Kong Bank Rothschild Barings
1895-1914: Paris	14	1746	65.0	Rothschild BPPB Banque Impériale Ottomane
1920-1930: New York	20	2869	68.9	JP Morgan National City Blair
1993-2007: New York	29	1145	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

Sources: See Appendix 1.

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

Period	Average Fee (%) (main issuing system)	Retention Coefficient (fee/spread)	Firm Commitment			Best Efforts		
			Min	Max	Average	Min	Max	Average
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	0.3	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	n.a.	n.a.	1.5
1920-30: NYSE	5.0	1.7	1.1	15.2	5.0	n.a.	n.a.	n.a.
1993-2007: NYSE	0.54	0.001	n.a.	n.a.	n.a.	0.02	2.75	0.54
1993-2007: London	0.76	0.003	n.a.	n.a.	n.a.	0.04	3	0.76
1993-2007 : All	0.84	0.003	n.a.	n.a.	n.a.	0.02	3.37	0.84

Sources: Authors' computations. Fees : Ziegler (1988), Select Committee (1875), Amaral (1984) Dawson (1990), Dritsas (1993), Anuario Estadistico (1927), Gille (1973), Flores (2004), Suzuki (1994), US Congress (1932). Archive: Rothschild Archives, ING Baring Archives, HSBC Archives, Crédit Lyonnais Archive, Guildhall Library. Spread at issue from sources described in data appendix. Benchmark risk free rates: London, NBER macrodatabase (before 1870) and Klovland (1994) after 1870; Paris: Vaslin (1999); New York interwar, *Wall Street Journal*. Modern period: Dealogic.

Table 3. Fees and Spreads (Firm Taking)

Period	R-squared	Fee=a+b*spread (t statistics)	H_0 : Significance of spread (at 5%)
1818-29 : London	n.a.	n.a.	n.a.
1845-76 : London	0.56	Fee = 3.421+0.65*spread (3.17) (2.75)	Accept
1877-95 : London	0.43	Fee = -1.843 + 2.492*spread (-1.1) (4.0)	Accept
1896-1913: London	0.41	Fee = 1.9535 + 1.479*spread (3.1) (5.0)	Accept
1896-1913: Paris	0.65	Fee = 1.658 + 1.513*spread (8.53) (5.85)	Accept
1920-30: NYSE	0.32	Fee = 0.62475 + 1.497* spread (1.00) (7.24)	Accept
1993-2007: NYSE	0.0002	Fee = 0.55642 + 0.004*spread (10.56) (0.27)	Reject
1993-2007: London	0.027	Fee = 0.59129 + 0.052*spread (7.5) (2.2)	Accept
1993-2007 : All	0.003	Fee = 0.8014 + 0.017*spread (12.6) (1.29)	Reject

Sources: Same as in Table 2.
Note: Sovereign bond spreads (spread) and fees are in percent.

Table 4. Clusters of contagion

	PAST 14 countries, 1822:3-1829:12						PRESENT 1994:11-2004 :2	
	Total		Non-Rothschild		Rothschild		Total & JP Morgan	
	200 b. pts	20%	200 b. pts	20%	200 b. pts	20%	200 b. pts	20%
Sharp Changes % of Obs.	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 *	67.8	45.6	67.8	44.2	0	11.1	46.0	38.7

Sources: Past: Authors' computations from Wetenhall (see Flandreau and Flores (2009) for details). Present: Mauro et al. (2006) : p. 115. The 14 countries for the past are Argentina (Buenos Aires), Austria, Brazil, Chile, Colombia, Greek, Guatemala, Mexico, Naples, Peru, Portugal, Prussia, Russia, Spanish. The 8 countries for the Present are: Argentina, Brazil, Bulgaria, Mexico, Nigeria, Philippines, Poland, Venezuela. Because of missing observations, we may slightly under estimate the extent to which there were sharp changes.

* The Contagion Ratio is the proportion of sharp changes in at least two countries to sharp changes in at least one country.

Table 5. The characteristics of emerging market debt

Period	Nb of bonds	Nb of Countries	Amount (min, max, average)	In 2008 $ (min, max, average)	Maturity (min, max, average)	Yield Prem. at launch (min, max, average) bps.	Rating at launch (max, min, average)
1818-1829:	23	14	0.6£M	65.7 $M	20 years	84	N.A.
London			6.4 £M	701 $M	60 years	597	
			2.5£M	273.8$M	31 years	357	
1845-1876:	148	39	0.1£M	9.9 $M	8 years	66	N.A.
London			165£M	16331$M	98 years	933	
			7.5£M	742 $M	33 years	397	
1877-1895:	106	29	0.04£M	4.5 $M	5 years	28	N.A.
London			140£M	15759$M	99 years	685	
			6.3£M	709 $M	47.6 years	275	
1895-1913:	100	30	0.07£M	7.75 $M	5 years	17	N.A.
London			38.4£M	4250 $M	98 years	500	
			3.8£M	420.6 $M	43.3 years	215	
1880-1913:	121	29	10 FFM	48.4 $M	5 years	-49.6	N.A.
Paris			1362 FFM	6725 $M	98 years	368	
			177.6 FFM	876 $M	50.4 years	125	
1920-1930:	124	36	0.148 $M	1.82 $M	2 years	42	Aaa
New York			125 $M	1535 $M	50 years	455	B
			26.29 $M	323 $M	26.7 years	291	A
1993-2007:	404	33	3 $M	3.75 $M	1.5 years	53	A+
New York			3951 $M	4940 $M	100 years	824	B-
			698 $M	873 $M	12.6 years	364	BB
1993-2007:	236	34	19.9 $M	24.9 $M	1.5 years	21.6	AA-
London			3910 $M	4889 $M	35 years	825	CCC+
			480 $M	600 $M	7 years	288	BB+
1993-2007:	876	50	3 $M	3.75 $M	1.5 years	11.6	AA-
All			3951 $M	4940 $M	100 years	825	CCC+
			558 $M	698 $M	9.9 years	333	BB+

Sources: Authors' database, see Appendix 1.

Figure 1a: Ranking of top 10 underwriters by market share (percentage), 1818-1829

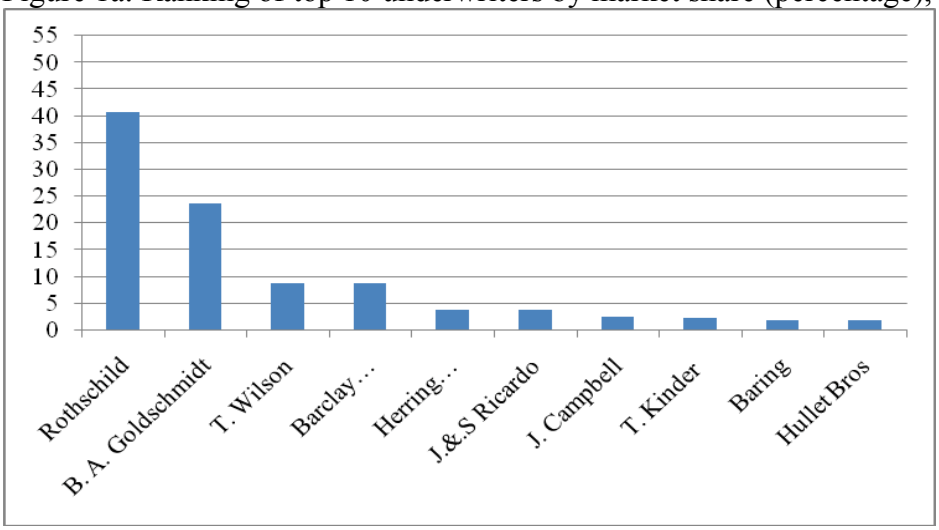


Figure 1b: Ranking of top 10 underwriters by market share (percentage), 1845-1876

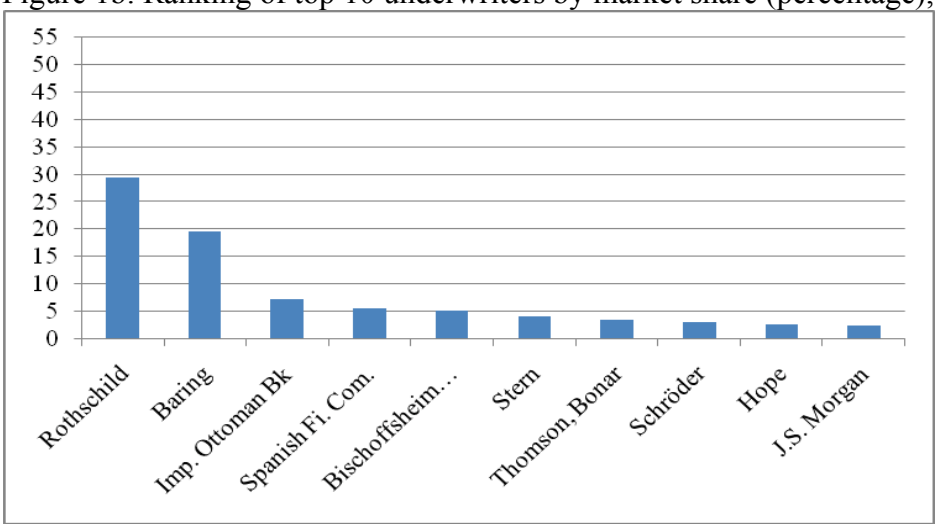


Figure 1c: Ranking of top 10 underwriters by market share (percentage), 1877-1895

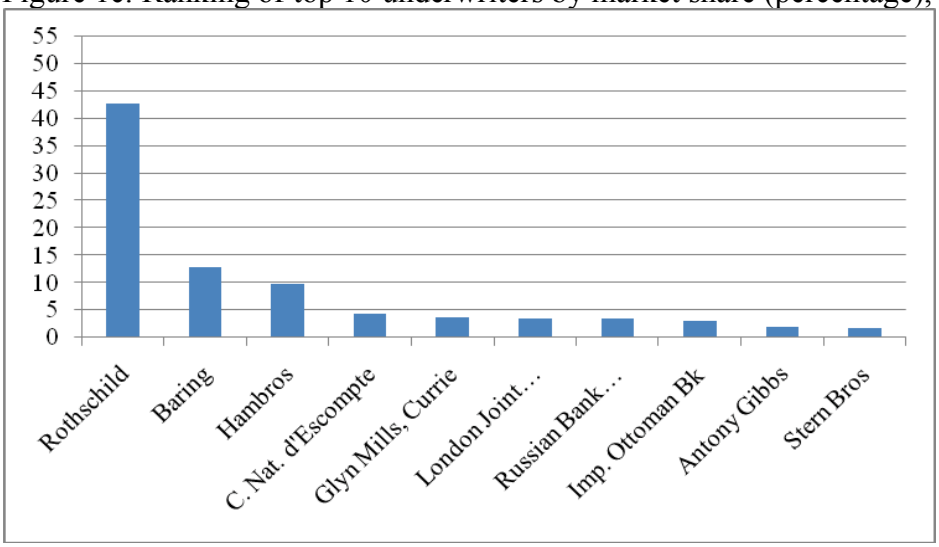


Figure 1d: Ranking of top 10 underwriters by market share (percentage), 1920-1930

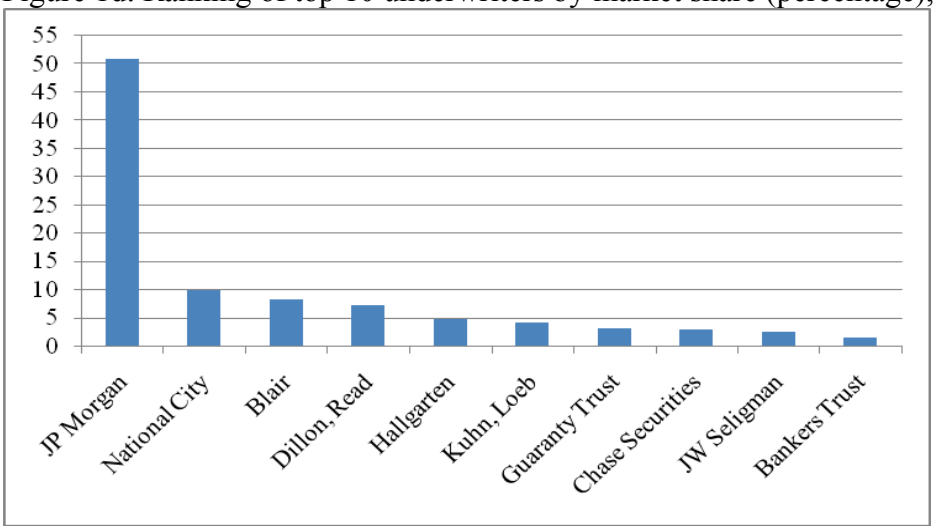
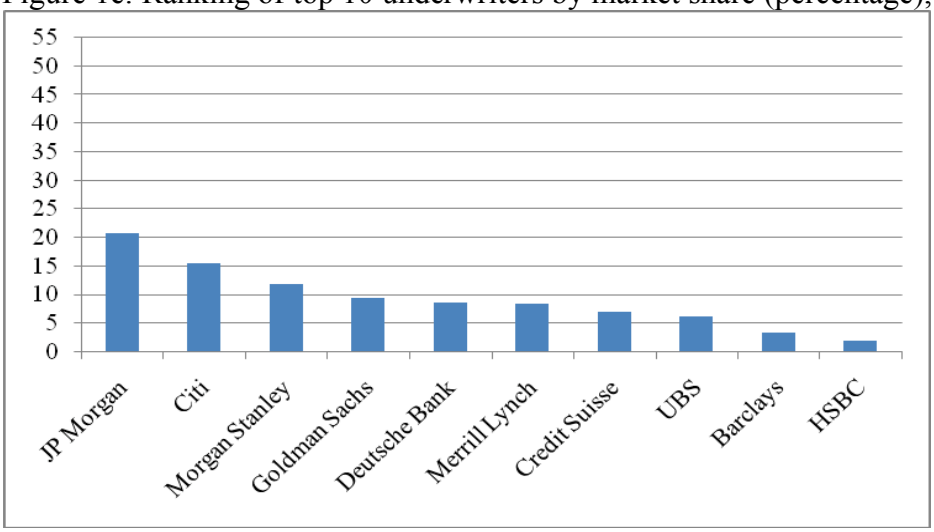


Figure 1e: Ranking of top 10 underwriters by market share (percentage), NY 1993-2007



Sources: Authors' database, see Appendix 1.

Figure 2a. Spreads at issue: Market leader vs. the rest (NY, Interwar).

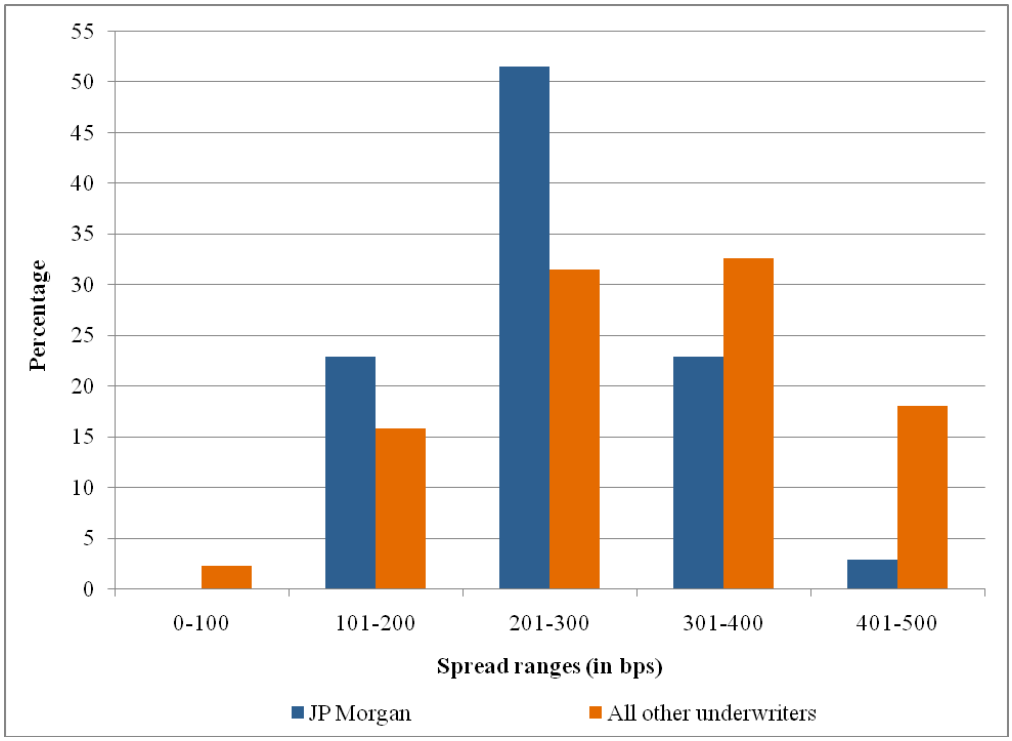
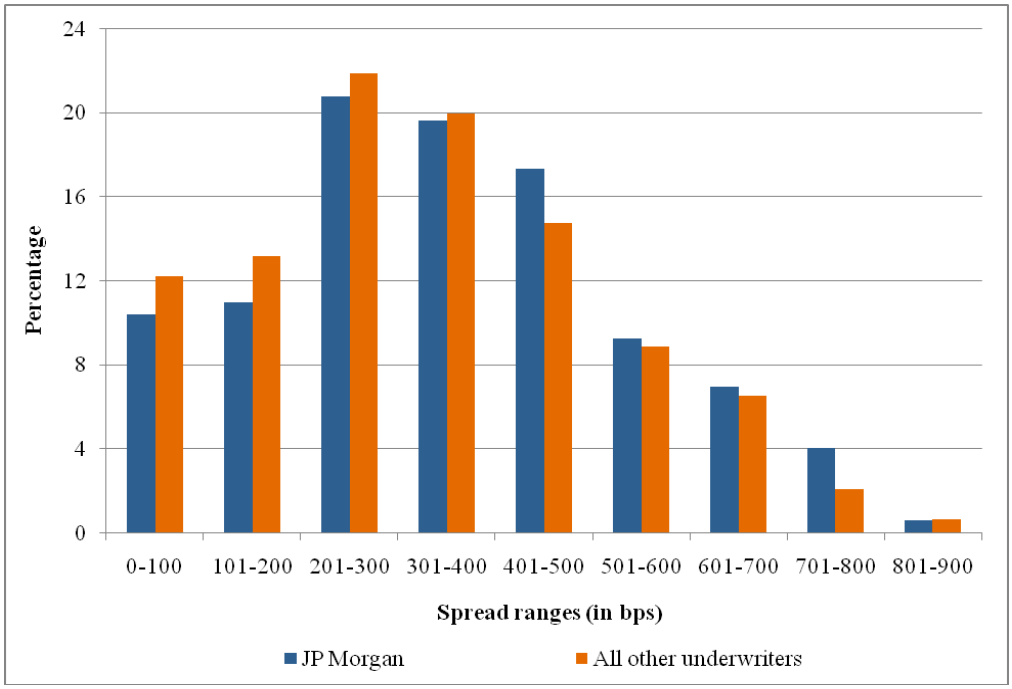
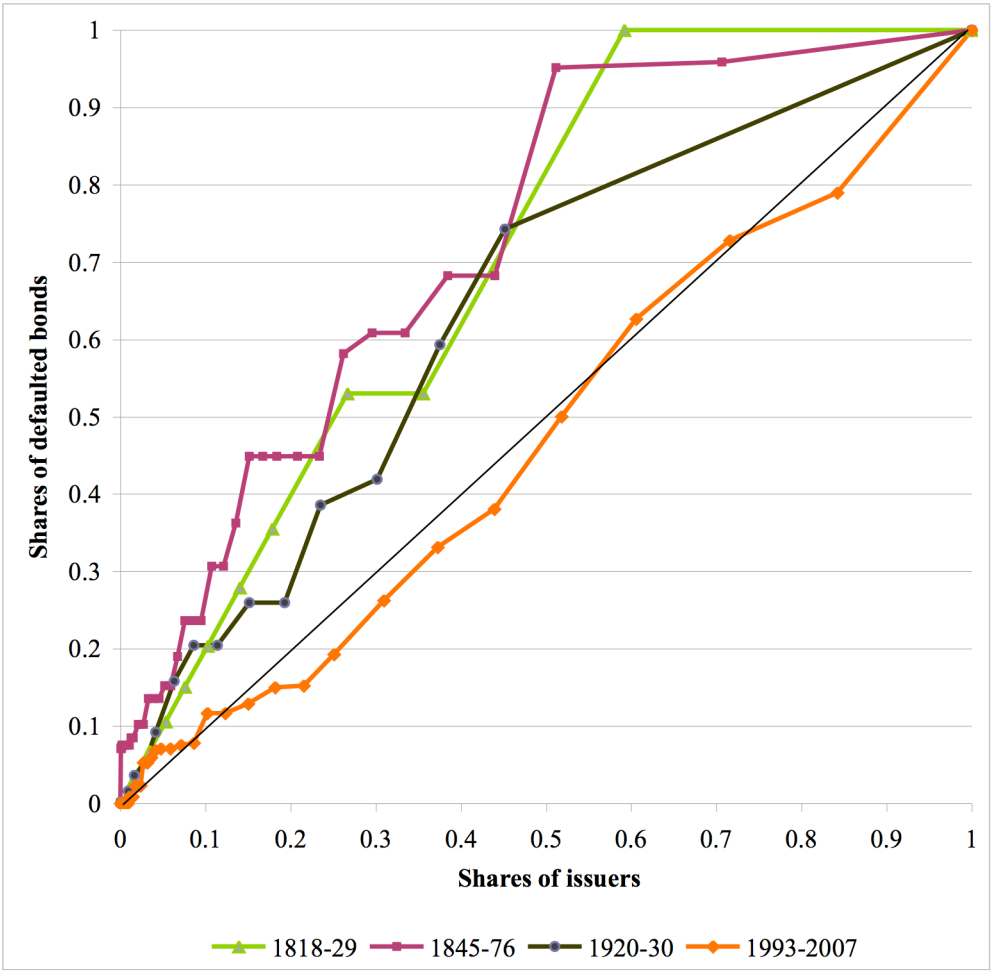


Figure 2b. Spreads at issue: Market leader vs. the rest (NY, modern era).



Sources: Authors' database, see Appendix 1.

Figure 3. Lorenz curves: 3 debt crises (1820s, 1870s, 1930s) vs. today.



Sources: Authors' database, see Appendix 1.

Figure 4a. Turnover (%) and spreads (bps): Now

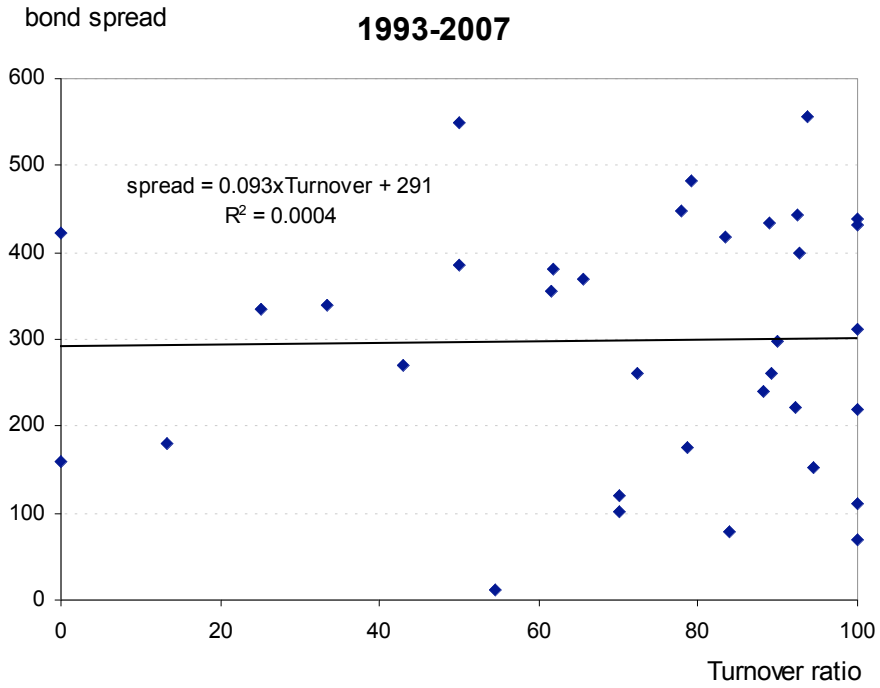
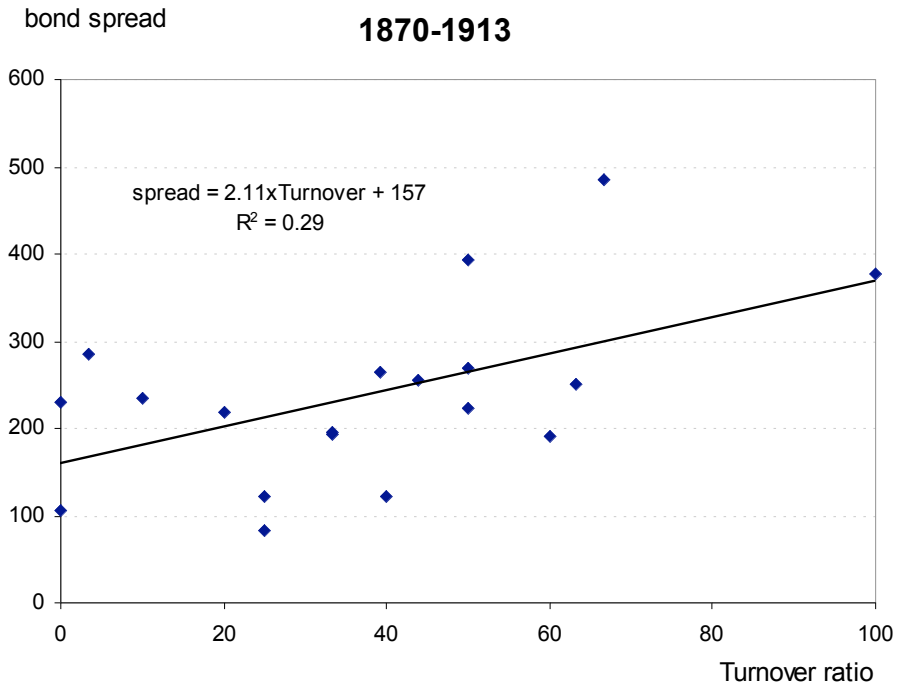
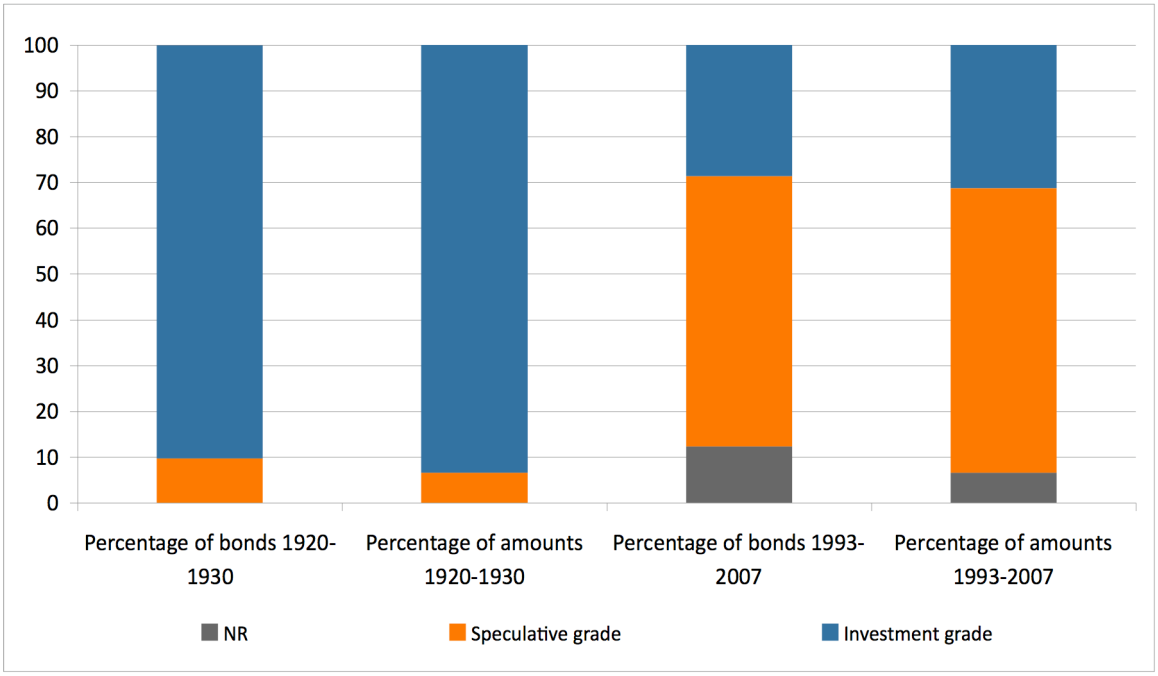


Figure 4b. Turnover and spreads: Late 19th century



Sources: Authors' database, see Appendix 1.

Figure 5. Percent. Investment Grade and Speculative Grade Securities (Interwar and now)



Sources: Authors' database, see Appendix 1 and Appendix 3.

Appendix 1. 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).[50] For New York, we have relied on the Manuals by Moody's, Fitch and Poor's as well as on the US Senate Committee on Finance Hearings on the Sale of Foreign Bonds published 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 dataset for sovereign default on foreign currency debt provided by Moody's (2008) and a useful database from Sturzenegger and Zettelmeyer (2005), which we matched against the Dealogic population of issues.[51]

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), and the Guildhall library (Hambro, and London Stock Exchange Archive), BNP-Paribas (Banque de Paris et des Pays-Bas), Crédit Agricole (Crédit Lyonnais), 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 Lewis (1938), Kuczinski (1932). Both have worked with, and somewhat interpreted, the evidence in the four

[50] . It covers securities sold in the official market where most government securities were transacted.

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

volumes US 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 2. 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, while a favorable one would yield a premium. Calling u a random shock with a uniform distribution $[-a,a]$ such that $E(u)=0$ (with $0 \le a \le 1$), 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 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 only accept to buy the bond from the government at a price that is sufficiently low so that the gains in the favorable states of nature compensate the losses incurred in unfavorable ones.[52]

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).

[52] . For simplicity, we consider that a shadow price exactly equal to the issue price means a success. In practice, transaction costs, as agents have to switch from identical assets to purchase the new one, imply that the issue will only succeed if the issue price is marginally below the shadow price so that investors are compensated for the expenses they face in reallocation their portfolio. Transaction costs are frequently mentioned as being the reason why there is today an "IPO" discount, i.e. that new bonds are on average sold marginally below the price at which similar assets are traded (ref?). This question being of second order compared to what we deal with here, we abstract from it.

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:

$$G = \left(p^i{}_E - p^i{}_A\right) \cdot \left\{ \frac{a^i - \left(p^i{}_E - 1\right)}{2a^i} \right\} + \frac{1}{2a^i} \int_{-a^i}^{p^i{}_E - 1} \left(1 + u^i - p^i{}_A\right) du^i$$

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

$$\left(p_E - p_A\right) \cdot \left(a - p_E + 1\right) + \frac{1}{2} \cdot \left\{ \left(p_E - 1\right)^2 - a^2 \right\} + \left\{ \left(1 - p_A\right) \cdot \left(p_E - 1 + a\right) \right\} = 0$$

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:

$$p^i{}_E = 1$$

Substituting this in the previous equation, we then get simply:

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

And the underwriting fee:

$$p^i{}_E - p^i{}_A = \frac{a^i}{4}$$

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 only accept government bonds at 75% of their issue price the issue. 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 3. 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
Speculative Grade	
Ba	Ba1 Ba2 Ba3
B	B1 B2 B3
Caa	Caa1 Caa2 Caa3
Ca	Ca
C	C

Source: Authors, from Moody's Manuals.