Underwriting as certification of bank bonds

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Outline

1. Introduction
2. Prior literature
3. Testing some hypotheses
   - 3.1. Identification strategy
   - 3.2 Methodology
   - 3.3. Data and descriptive statistics
4. Results
   - 4.1. Baseline results and the net value of reputation
   - 4.2. Third party issuance only
   - 4.3. Robustness check
   - 4.4. Other tests
5. Conclusions

1. Introduction

- The information asymmetry that typically exists between insiders (issuing firms)and outsiders (investors) in security issuance becomes more acute during a crisis as underwriting banks and issuing banks are affected by reputational problems.
- Banks not only sell and market securities as underwriters, they also act as issuers themselves.
- However, prior studies have not paid attention to bond debt issuance by banks.

- Banks are supposed to offer certification benefits to issuers on the debt they allocate as underwriters to investors.
- Underwriters seek to lower issuers' transactional costs of borrowing and their informational cost of capital by solving its own information problem with the investors, building "reputation capital" as a repeated player in bond debt markets.
- Allowing a third-party bank to underwrite its debt may place an issuing bank at a competitive disadvantage by disseminating material information to the third-party bank in the course of underwriting due diligence.

IN OUR PAPER

- This paper seeks to examine issuer choice between self-issuance and third- party issuance and to estimate the effects this choice in both good and poor market conditions.
- The identification strategy in this paper has four dimensions:
  - First, we differentiate bank debt self-issuance from third-party bank debt issuance.
  - Secondly, we distinguish reputable versus less reputable underwriters.
  - Third, we account for the non-random matching of underwriters and issuers.
  - Fourth, we investigate the impact on a bank's costs of debt from employing reputable underwriters both before and during the crisis.

2. Prior literature

- Explaining the effects of underwriter reputation on debt quality requires addressing the more simple (but fundamental) question of how underwriters and issuers choose each other. Several previous studies dealing with underwriting in both debt and equity markets typically assume that issuer/underwriter association is a one-sided choice.
- Fernando *et al. (2005) empirically test a* theory based on a mutual choice of issuers and underwriters, showing that the quality of both agents is complementary to each other.

- Given the relevance of quality in an underwriter-issuer matching, the so-called **"certification hypothesis"** suggests underwriters reduce information asymmetries between investors and issuers by using their reputation to certify issuer quality (Booth and Smith, 1986).

- Chemmanur and Krishnan (2012) demonstrate that reputable underwriters may shift from certifying quality to maximizing an issue's valuation. Thus, rather than certifying issuer quality some underwriters may use their market-power to obtain larger gains for themselves and the issuers, the so-called **"market power"** hypothesis.

- **Four potential contributions in the paper compared to the extant literature:**
  - First, we analyze, the role of underwriter reputation on bank bond issuance when both issuing "firms" and underwriters compete in the same industry. This permits us to examine the unique feature of the self-issuance alternative in bank bonds' placement.
  - Secondly, we examine the impact of underwriter reputation on bank bond underwriting fees and yields in both normal times and in crisis years.
  - Third, unlike most studies we do not assume a random-matching between issuer and underwriters but rather control for endogeneity in both bank and underwriter choice.
  - Fourth, we control for the effects of the crisis on underwriter reputation.

Contributions

3. Hypothesis, data and methodology

3.1. Identification strategy

- We formulate the following hypotheses:

H1. Banks choose to self-issue (or choose non-reputable third-party issuance) if there are costs or market restrictions that overcome the potential benefits of third-party reputable issuance.

H2: If third-party issuance is chosen, underwriter reputation acts as certification of the quality of bank bonds by reducing the offering yields (raising the offering price) and increasing fees paid by the issuing bank to the bank underwriting the bond.

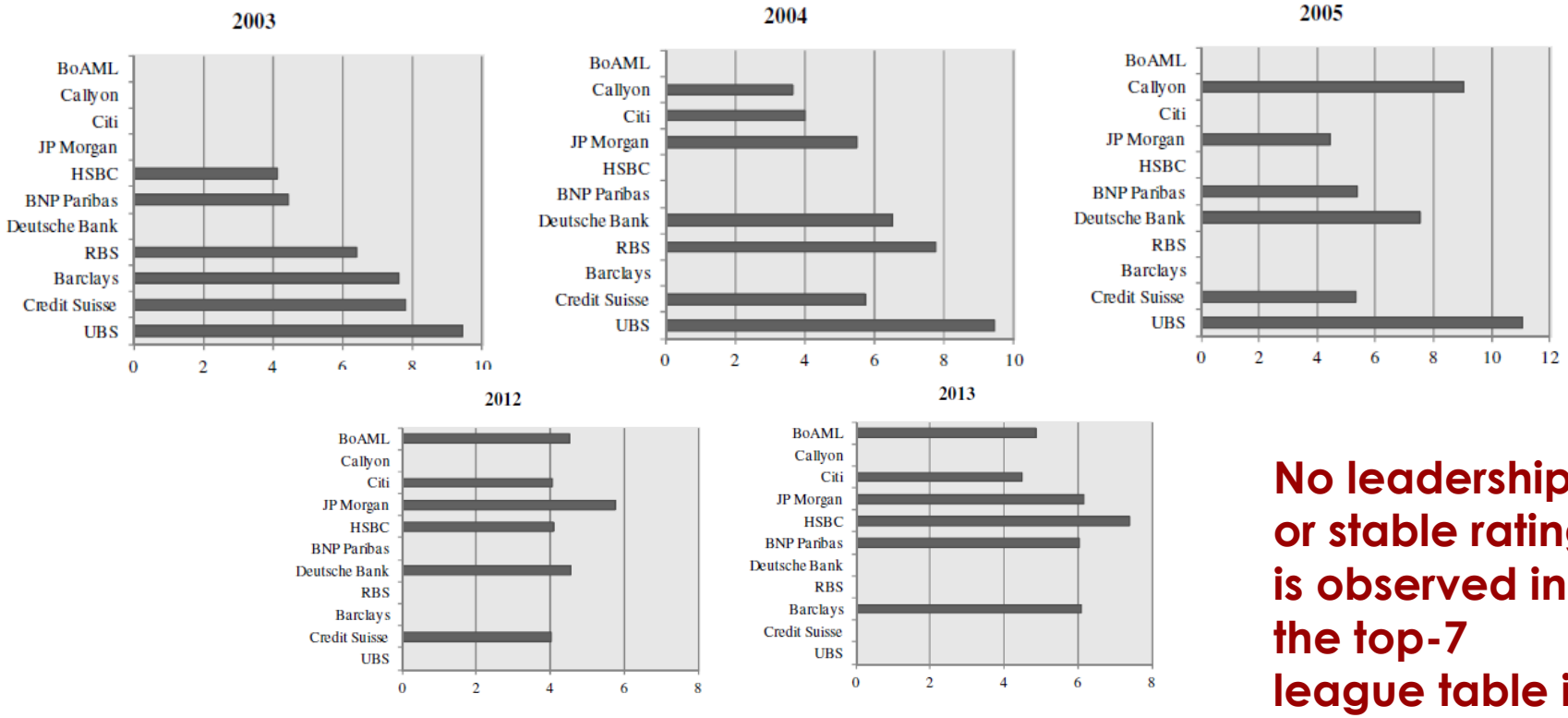
- In order to distinguish between reputable and less reputable underwriters **we identify reputable underwriters as those in the top-7 of the annual bank bond underwriting league table.** While the studies referring to the US case tend to rely on the top-3 underwriters, we use the top-7 as the equivalent European match given the significantly lower degree of concentration in the European debt underwriting markets. Using the information provided by Dealogic as of 2013, we find that the top-3 debt underwriters in the US led 30.5% of the corporate debt market while the top-7 in Europe led 40.5% of the deals.

- Recall that, **in Wall Street, an investment bank seems to either belong to the "bulge bracket" or it does not."**

Identifying the reputable underwriters

Figure I. Main underwriters in the European bank bonds' market (2003-2013)

This figure shows the market share of the main underwriters of bank bonds in Europe over 2003-2013. The market shares of the underwriters are shown in percentage each year. A market share is not shown if the underwriter is not among the top-10 in a given year.



Source: Dealogic and own elaboration.

No leadership or stable rating is observed in the top-7 league table in Europe

3.2. Methodology

- We use a two-stage model to control for the endogeneity problems that emerge from non-random matching between issuers and underwriters. Equation (1) is the latent issuer–underwriter matching equation:

$$I_i^* = Z_i'\gamma + \varepsilon_i \qquad (1)$$

- From (1), it is possible to estimate:

$$y_{1i} = x_i'\beta_1 + u_{1i} \qquad (2)$$

$$y_{2i} = x_i'\beta_2 + u_{2i} \qquad (3)$$

- where y_{ji} *(j=1,2) is the issue yield (or alternatively, the fee paid to the underwriter) so* that y_{1i} *is the second-stage equation for reputable underwriters and* y_{2i} *is the second-stage* equation for less reputable underwriters; *x is a vector of controls that includes the* lambda (Mills ratio) parameter from equation (1).

- Equation (2) is the yield equation for the reputable banks, and (3) is that for the less reputable banks under the conditions that $y_{ji} = y_{1i}$ *iff* $I_i = 1$, *and* $y_i = y_{2i}$ *iff* $I_i = 0$.

- Fang (2005) generalizes the model to allow for a more specific computation of the value of underwriter reputation. In particular, she computes a hypothetical yield (alternatively, fee) that would be obtained by a less reputable bookrunner in an issue that is actually been run by a reputable underwriter. The difference between the actual and the hypothetical yield gives the value of underwriter reputation. The difference is expressed as follows:

$$E\left[y_{2i} \mid I_i^* > 0 \right] - y_{1i} \qquad (4)$$

Hypothetical yield — Actual yield

- *In our sample* case, the reputation effect can be also inferred before and during the crisis. The same approach can also be used in the case of fees.

How to specifically compute the value of underwriter reputation

3.3. Data and descriptive statistics

- The original data sample consists of 3,729 bond deals underwritten by banks in 24 European countries during 2003-2013. This period allows us to control the effects of underwriter reputation on yields and fees before and during the crisis.
- The sample covers bank bond deals only. The deal data is extracted from the Dealogic database. In our sample, 2890 deals were issued by less reputable underwriters (i.e. a weighted syndication underwriting reputation share below the share of the 7th largest underwriter in the ranking) while 839 were issued by reputable underwriters (with a weighted syndicate reputation share above the share of the 7th largest bond underwriter).
- Issuer and underwriter characteristics are obtained from Bankscope while ratings are from Moody's.

Table I. Descriptive statistics. All issues (2003-2013)

This table shows descriptive statistics over the whole sample period (2003-2013) for all the deals in the sample. The variable … ue amount charged … the bond issue; Is … size is the value of … he issuing bank in … al's issuer has issue … m 1 to 22 with 22 … e dummy callable … rket share of the u … using the proceeds …

- Average annual yield at offering is 4.04% and fees 0.85%.
- The typical issuer is a mid-side bank with assets of around Eur 56 billion.
- The average issue size is Eur 0.65 billion.
- Average deal rating –in a scale from 1 to 22, with 22 being an Aaa- rating is 18
- The mean underwriter market share is 2.83%. The average market share of the 7th largest underwriter is 5.74%.

							Obs.
Yie							3285
Fe							897
Issuer siz							3649
Issuer p							3289
Issuer v							3780
Frequenc							3780
Issue siz							3780
Dea							3627
Matur							3780
Callab							3780
Underwriter Market share (%)	2.83	0.00	1.89	11.17	13.66	0.00	3780

Table II. Descriptive statistics. Issues conducted by reputable vs. less-reputable underwriters

Panel A. Deals issued by reputable underwriters

	Mean	p1	p50	p99	max	min	Obs
Yield (%)	3.92	0.95	3.43	13.40	42.09	0.03	759
Fees (%)	0.92	0.06	0.75	2.05	4.00	0.01	375
Issuer size (Eur mill.)	97246.10	12210.10	63649.00	299906.00	380503.00	11144.51	774
Issuer profitability	0.08	0.01	0.04	0.16	0.18	-0.04	839
Issuer volatility (%)	0.029	0.010	0.016	0.032	0.040	0.008	839
Frequency of	128.53	3.00	81.00	458.00	458.00	1.00	839
Is						9	839
						0	805
						9	839
						0	839
U						1	839

	Obs
	2526
	522
Iss	2875
I	2941
Is	2941
	2941
Is	2941
	2822
	2941
	2941
U	2941

utable

Issuer size (Eur mill.)	5.18
Issuer profitability	1.84
Issue size (Eur mill.)	3.04
Issuer volatility (%)	-2.39
Frequency of issuance	1.28
Deal rating	2.88
Maturity (years)	3.75
Callable dummy	0.06
Underwriter Market share (%)	4.84

- As for the characteristics of the issuer, all are significantly and statistically different for the two groups, although the mean difference for issuer profitability is only significant at 10%.
- Issuers in deals run by reputable underwriters are for typically larger, less profitable and less volatile banks.
- The issue size, rating and maturity are also larger for deals conducted by reputable underwriters.

The average yield for the reputable group is 3.92% and 4.44% for the less reputable group.

Reputation, however, implies paying a higher fee (0.92% vs. 0.74%).

4. Results

- The **baseline sample** includes bonds that have been entirely issued by **third parties only, partially self-managed or totally self-managed.** The deals correspond to both placements in the Euro-Bond Market –where most of the deals are run by third parties and both reputable and less reputable underwriters have a significant role- and domestic placements –where both self-issuance and third-party underwriting are common but most of the issues are underwritten by less reputable underwriters.

- Therefore, the baseline sample exploits the richness of the different issuance options and markets.

- On a later stage, we specifically deal with the bank bonds that are entirely underwritten by third parties in the Euro-Bond Market as this will reflect an stricter consideration of the reputation-buying problem.

Table III. Selection equation (first-stage) regression. The likelihood to self-issue

This table reports the results of the first-stage selection equation for self-issuance vs. third-party issuance. It is a probit estimation where the dependent variable is a binary choice equaling 1 if the issuing bank is the underwriter of an issue, and 0 is the deal is issued by a third party. The variable issuer size is the year-end value of total assets in the year before the bond issue. Issuer profitability is net income divided by total assets for the year before the bond issue. Issuer volatility is the standard deviation of the return-on-assets of the issuing bank in the year before the issue. The frequency of issuance indicates the average number of times the deal's issuer has issued a bond over the sample period. The maturity variable is the maturity of the bond as a number of years. The dummy callable is equal to 1 if the bond has a call provision and 0 otherwise. The crisis dummy takes the value 1 if the deal is issued from August 2008 to December 2012 and zero otherwise. The variable "previous issue undertaken by a reputable underwriter" is a dummy that takes the value 1 if the previous placement of the issuer was conducted by a reputable underwriter, and zero otherwise. The market share of the issuer in the domestic market is the participation of the issuer in bank bond issuance in the country in that year. Market issuance is the amount issued by other banks in a month time window over the total market issuance in the year. The estimation includes country dummies. Standard errors are clustered at the issuer and deal level.

	Coefficient	z
Issuer size	-0.251***	-2.62
Issuer profitability	-0.234*	-2.01
Issuer volatility	0.183**	2.24
Frequency of issuance	-0.008***	-3.15
Maturity	-0.202**	-2.17
Callable dummy	0.008	0.49
Crisis dummy	-0.353***	-5.02
Domestic vs. Euro-bond dummy	0.599***	4.19
Previous issue undertaken by a reputable underwriter	-0.136**	-2.28
Previous self-underwriting experience	0.088*	1.89
Market share of the issuer in domestic market	0.014	0.68
Market issuance	0.466***	3.95
Constant	-1.922***	-3.74
Country dummies	Yes	
Observations	3,729	
Log-likelihood	-197.60	
Pseudo-R^2	0.42	
*** p<0.01; ** p<0.05; * p<0.1		

Table IV. Second-stage baseline results for self-issued deals: yield equation

Second-stage OLS estimation results for the yield equation are shown in this table. The variable yield is the "offering yield" at the time of issue. Results are shown for self-issued deals and deals issued by third parties according to the definition in Table III. The F-tests estimate coefficient differences between both groups (p-values are reported). Standard errors are shown in parentheses below coefficient estimates. Deal rating is a numerical rank for the Moody's bond rating from 1 to 22 with 22 being an Aaa rating. Issuer volatility is the standard deviation of the return-on-assets of the issuing bank in the year before the issue. The maturity variable is the maturity of the bond as a number of years. The crisis dummy takes the value 1 if the deal is issued from August 2008 to December 2012 and zero otherwise. The estimation includes country dummies. Standard errors are clustered at the issuer and deal level. The inverse Mills-ratio is obtained from first-stage probit estimations to control for self-selection.

	Self-issuance	*Third-party*	*Self-issuance*	*Third-party*	*F-tests (P-value)*
Deal rating	-0.379*** (0.125)	-0.563*** (0.157)	-0.362*** (0.118)	-0.518*** (0.122)	0.04
Issuer volatility	0.146** (0.069)	0.123** (0.057)	0.140** (0.064)	0.135** (0.065)	0.22
Maturity	0.513* (0.256)	0.420** (0.198)	0.481* (0.242)	0.400** (0.194)	0.25
Deal rating X Crisis dummy	-	-	-0.301*** (0.102)	-0.588*** (0.117)	0.03
Issuer volatility X Crisis dummy	-	-	0.287*** (0.051)	0.204*** (0.035)	0.18
Maturity X Crisis dummy	-	-	0.221** (0.110)	0.155** (0.076)	0.06
Constant	4.43*** (1.118)	6.30*** (1.732)	4.16*** (1.101)	4.51*** (1.503)	0.39
Inverse Mills Ratio	0.328** (0.160)	-0.029 (0.020)	0.385** (0.169)	-0.020 (0.016)	0.02
Crisis dummy	-	-	0.015** (0.004)	0.010** (0.005)	0.07
Year dummies	Yes	Yes	No	No	
Country dummies	Yes	Yes	Yes	Yes	
Observations	1459	2,321	1459	2,321	
R^2	0.72	0.81	0.75	0.84	

*** p<0.01; ** p<0.05; * p<0.1

Table V. Selection equation (first-stage) regression.
The likelihood to access a reputable underwriter

This table reports the results of the first-stage selection equation. It is a probit estimation of the matching equation between issuers and underwriters where the dependent variable is a binary choice equaling 1 if a reputable bank is the underwriter of an issue, and 0 otherwise. For syndicated issues the dependent variable equals 1 if the average market share of the syndicate is larger than the 7th underwriter in the league tables in that year and zero otherwise. The variable issuer size is the year-end value of total assets in the year before the bond issue. Issuer profitability is net income divided by total assets for the year before the bond issue. Issuer volatility is the standard deviation of the return-on-assets of the issuing bank in the year before the issue. The frequency of issuance indicates the average number of times the deal's issuer has issued a bond over the sample period. The maturity variable is the maturity of the bond as a number of years. The dummy callable is equal to 1 if the bond has a call provision and 0 otherwise. The crisis dummy takes the value 1 if the deal is issued from August 2008 to December 2012 and zero otherwise. The variable "previous issue undertaken by a reputable underwriter" is a dummy that takes the value 1 if the previous placement of the issuer was conducted by a reputable underwriter, and zero otherwise. Previous-issuer underwriting matching is a dummy that takes the value 1 if the same issuer-underwriter matching occurred earlier, and zero otherwise. Shared specialization is a dummy that takes the value 1 if the issuer and he underwriter has the same business specialization (commercial vs. investment banks) and zero otherwise. The estimation includes country dummies. Standard errors are clustered at the issuer and deal level.

	Coefficient	z
Issuer size	0.361***	6.06
Issuer profitability	-0.174*	-1.94
Issuer volatility	-0.323**	-2.15
Frequency of issuance	0.002**	2.04
Maturity	0.268**	2.31
Callable dummy	0.006	0.18
Crisis dummy	0.705***	4.93
Previous issue undertaken by a reputable underwriter	0.277**	2.15
Previous issuer-underwriter matching	0.108*	1.91
Shared specialization	-0.063**	-2.23
Constant	-4.101***	-6.39
Country dummies	Yes	
Observations	3,729	
Log-likelihood	-161.35	
Pseudo-R^2	0.43	
*** p<0.01; ** p<0.05; * p<0.1		

Table VII. Second-stage baseline results. Reputable vs. less reputable third-party issuance: fee equation

Second-stage OLS estimation results for the fee equation are shown in this table. The fee is measured as a percentage of the issue amount charged by each underwriter. Results are shown for deals issued by reputable underwriters and for deals issued by less-reputable underwriters according to the definition in Table IV. The F-tests estimate

- Issue size is positively and significantly related to fees but he effect is economically larger for deals run by reputable underwriters (0.118 vs. 0.081).
- A better issue rating permits a issuer to make lower fee payments, although this saving effect is found to be larger for the deals run by reputable underwriters.
- These relationships hold during the crisis with one important exception, the negative effects of the ratings on the fees is only found to be statistically significant for the reputable group, suggesting that even if underwriters are paid higher fees, these underwriters may charge lower fees to those issuers with higher ratings, while this pricing advantage is not found for less reputable underwriters.

Crisis dummy	-	-	(0.011)	(0.012)	
Leverage	-	-	-0.186* (0.093)	-0.197** (0.087)	0.74
Year dummies	Yes	Yes	No	No	
Country dummies	Yes	Yes	Yes	Yes	
Observations	305	508	305	508	
R^2	0.60	0.74	0.61	0.76	

*** p<0.01; ** p<0.05; * p<0.1

Table VI. Computing the value of reputation: baseline sample

This table compares the actual vs. the hypothetical value of the yields and fees. The difference between those magnitudes proxies the value of underwriter reputation. T-statistics for the mean difference test are reported. The computation of th

Whole period	Issues c unde
	Issues of unde
Pre-crisis years (2003-2006)	Issues c unde
	Issues of unde
Crisis years (2006-2012)	Issues c unde
	Issues of unde

- For the entire sample period, the average yield at offering in deals managed by reputable underwriters is 3.96% and would have been 4.14% if the issue had been by a non-reputable underwriter. Similarly, the average fee paid is 0.83% while it would have been 0.79% if the deal had been by a less reputable underwriter.

- The opposite is found for the less reputable group (4.18% versus 4.06% in the case of yields and 0.75% versus 0.78% in the case of fees). The results for the crisis years also shown in Table VI and suggest that reputation effects increased during the crisis and that the yield savings were even larger.

ECONOMIC EFFECTS

- The total average proceeds for the reputable group in our sample are Eur 0.791billion and Eur 0.615 billion for the less reputable group.
- Net actual proceeds for the reputable group with the observed pricing conditions would be Eur 0.752 billion while the net hypothetical proceeds (if the issues had been managed by less reputable underwriters) would have been 0.743 billion. **This implies a net gain from reputation of Eur 9 million per deal on average.**
- Similarly, the net actual proceeds for the less reputable group are Eur 0.578 billion, while the average net hypothetical proceeds (if the deals had been run by reputable underwriters) would have been Eur 0.584 billion. **This implies an average net loss from poor reputation of Eur 6 million per deal in the less reputable group.**
- If the same computations are made for the crisis years, the average gain for the reputable group is Eur 11 million and the average loss for the less reputable group is Eur 7.5 million. This evidence suggests that the **certification role of underwriters became even more important during crisis years for European bank bond issuers.**

Robustness checks

- Our results are robust to:
  - Different measures of reputation
  - Exclusion of the largest underwriter
  - Reputation and issue rating class
  - Discrete versus continued measure of reputation
  - Sample breakdowns
  - Different first-stage specifications

5. Conclusions

- Using the sample information from 2003 to 2013 we estimate that:
- **There is a Eur 9 million net saving from reputation per deal in the reputable group while there is a Eur 6 million net loss from lack of reputation in the less reputable group.**
- **These differences grow to Eur 11 and Eur 7 million, respectively, during the European crisis years (2007-2012).**