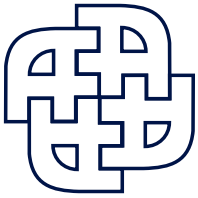

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The impact of lending relationships on the choice and structure of bond underwriting syndicates

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RESUMEN/ABSTRACT

This research studies the effects of prior bank-firm relationships on the choice and structure of debt underwriting syndication. Using a sample of European corporate bonds during the period 2003-2013, it is shown that prior lending relationships have a significant impact on the syndicate choice and that this effect is particularly significant during the crisis. Furthermore, it is also found that reputable banks refrain from joining a syndicate if they perceive that they are matching with less reputable counterparts. Regarding a bond pricing effect of syndicates, this study finds that when the syndication choice is driven by lending relationships, there is an associated negative effect on at-issue bond yield spreads.

JEL Classification: G32, G21.
KEYWORDS: Underwriters, banks, syndicate, bond, multiple underwritten

1. INTRODUCTION

The common practice in issuing debt in capital markets has moved from the use of a sole bank as underwriter to underwriting syndication. The size of these syndicates has risen sharply in recent years, particularly during the financial crisis.

Prior literature has examined the effects of underwriting syndication for issuers and investors, highlighting the benefits –in terms of distribution, risks and visibility– of syndicate-placed deals (Corwin & Schultz, 2005; Huang & Zhang, 2011; Lee, Nasser & Via, 2015; Kim & Shin, 2012) as well as the potential risks, including a relaxation in screening and certifying functions (Shivdasani & Song, 2011). In addition, some recent studies have suggested a change in the structure of investment banking relationships (Corwin & Stegemoller, 2014; Morrison, Schenone, Thegeya & Wilhelm, 2014) to a model of less exclusive relationships with a large number of connections. These changes in the industry have occurred as commercial banks have entered into the debt underwriting business in recent years, taking advantage of the relationships and experience accumulated in lending markets (Ang & Zhang, 2004; Gande, Puri, Saunders, & Walter, 1997; Shivdasani & Song, 2011; Yasuda, 2005). This entry has been more difficult in the case of equity underwriting, as asymmetric information might affect equity markets more than debt markets, and also because in the equity underwriting business the entry is primarily achieved through acquisitions by investment banks (Chaplinsky & Erwin, 2009).

Some investment bankers have reported that syndication emerges from issuers' demand. In a number of deals, underwriting syndication is explained to a large extent by the decision of firms to favor their bank relationships in difficult times[1]: *«When times are tough and balance sheets scarce, putting your relationship bank on a deal as a passive bookrunner is an easy and also very visible way of rewarding them.»*[2]

The increasing number of syndicated deals has led investment chiefs to highlight the distinction between active and passive underwriters whilst drawing attention to, from their perspective, the risk of avoiding underwriting responsibilities in large syndicates. Thus, the role of banking relationships across markets as well as how these relationships affect the inner functioning of a syndicate has become a relevant feature of debt markets in recent years. Despite these market trends, empirical evidence is still relatively sparse. Some important questions remain unsolved as to why the average underwriter's syndicate size continues to increase over time, how these

[1] Extracted from the Financial Times Stothard, M. (21 February 2013). Big banks' share of corporate debt at new low. www.ft.com/markets

[2] The term «bookrunner» is also employed because the method mostly used in debt placement is «at the best efforts». However, expressions like «lead underwriter» and «underwriter» continue to be used indistinctly. In this paper we will use the term underwriting to refer to the placement procedure for comparative purposes, due to its extensive usage in the industry and the literature.

syndicates are being structured, the role that an underwriter's reputation plays within the syndicates, and the related pricing effects.

In this paper, we present a broad view of debt markets and investigate the underwriting syndication trend in corporate debt issuance by non-financial companies, considering the impact that their relationships with banks have on various dimensions of underwriting syndication and on the matching of issuers and underwriters. Firstly, we explore the factors that explain the decision to appoint a syndicate and whether firms favor their lending relationships with banks when choosing an underwriter, in particular during crisis years. Secondly, we examine the size and structure of the syndicate and how they are related to existing bank-firm relationships. Third, we explore the impact of the syndicate structure on bond pricing.

Our analysis contributes to the extant literature on issuer-underwriter matching by explaining how issuers' relationships influence the decision on whether to syndicate the issuance or remain with a sole underwriter as well as on the structure of the syndicate formation. Additionally, this paper explores how the concentration of these relationships affects the underwriting choice before and during the crisis. Regarding the syndicate structure, this study particularly contributes to the literature on syndication by examining how underwriters' reputational concerns on debt markets may drive the syndicate formation.

Our analysis relies on a sample of 1887 corporate bonds issued in Europe during 2003-2013. Although the underwriting syndication trend is not exclusive to Europe, it has been most observed during the European banking crisis in debt markets. Furthermore, the larger dependence of European companies on the lending market compared with U.S firms is likely to reflect to a larger extent the effects of bank-firm relationships on underwriting syndication. The research period allows us to control for the effects of the bank-firm lending relationships before and during the crisis. Our unique database contains detailed information about bond issuers, syndicates and issuer-underwriter lending relationships.

The empirical strategy comprises several stages. First of all, we employ probit models to explain the choice of a syndicate and the likelihood of being appointed as underwriter. Following Sufi (2007), the issuer-underwriting matching model contains one observation for every potential underwriter of each bond, thereby allowing multiple choices and correlation across all the eligible underwriters in a specific deal. We then use a count data model to explore the syndicate size. We also use

an additional probit model to examine the determinants of the syndicate structure, treating each underwriter in a syndicate deal as a different observation. We thus examine syndication from the perspective of the underwriter, providing a better understanding of the role that factors such as underwriter reputation and/or issuer-underwriter relationships may have on the syndicate formation. Finally, we use a Heckman selectivity model that accounts for self-selection to investigate the impact of the syndicate choice on bond pricing.

By way of preview, the results suggest that the syndicate choice is influenced by the strength of the relationship between the issuer firm and its lenders. Firms that hold strong relationships with their lenders are more likely to use a syndicate to issue their bonds, in particular during the crisis years. We also find that reputational concerns also affect the syndicate formation as more reputable underwriters are less likely to join a syndicate if their potential syndicate partners are less reputable underwriters. Finally, we find that the factors that favor the syndication choice (bank relationships, reputation) also have a negative effect on bond spreads.

The remainder of the paper is organized as follows. Section II reviews the related literature. Section III describes the dataset. The hypotheses and the methodology employed are explained in section IV. Section V discusses the main empirical results. Section VI concludes.

2. RELATED LITERATURE

In spite of the recent evolution of multiple underwritten bonds, a growing body of literature has studied this phenomenon in equity and debt markets. The main determinants of multiple underwritten IPOs have been examined in a seminal paper by Hu & Ritter (2007). Using a bargaining model, they predict that underwriters accept to jointly run an IPO when the issue size is large enough to ensure that the transaction is profitable («size hypothesis»). Empirically, they find that the increasing percentage of this kind of IPOs is explained by larger issuances, the significant reduction of IPOs after 2000, a decreased importance in all-star analyst coverage and the increased number of buyout-backed IPOs. Jeon, Lee, Nasser & Via (2015) study how these IPOs are related to firm visibility, concluding that greater visibility is achieved by going public with multiple lead underwriters. Furthermore, they find that IPO size is the main determinant for choosing more than one underwriter. Corwin & Schultz (2005) examine the role of IPO syndicates, concluding that both

the number of underwriters and the number of co-managers increase with deal's proceeds while venture backed firms are associated with more co-managers. Consistent with the size hypothesis, Gunay & Ursel (2015) and Shivdasani & Song (2011) find that larger issues are more likely to have more underwriters. They find that firms that have previously appointed a commercial bank as co-manager with loans from underwriters belonging to industries with a deep bank penetration are more likely to employ a syndicate. Jo, Kim & Shin (2012) find that inefficient firms – in terms of corporate governance– are associated with large SEOs syndicates. In particular, they argue that the aim of reducing information asymmetries is what justifies hiring a large number of underwriters. In this sense, some of the extant studies relate the size hypothesis with «risk-sharing», suggesting that offering size is related to more risk. However, other studies, such as Corwin & Schultz (2005), do not find evidence of riskier offers being handled by larger syndicates.

To gain further insight into underwriting syndication it is relevant to consider the related strand of literature that examines how the formation of a syndicate affects its functions.[3] Pichler & Wilhelm (2001) propose a syndicate theory relating the organizational form of syndicates with moral hazard.[4] They argue that the syndicate's organizational structure is a consequence of the central role of relationships and reputation, in which the structure serves to alleviate the moral hazard problem. Relationships between banks are critical in the syndicate formation because they help to mitigate free riding and moral hazard problems (Corwin & Schultz, 2005). Therefore, the underwriters' certification role is enhanced through the syndicate. However, contrary to the certification hypothesis, in a highly competitive context Shivdasani & Song (2011) find that syndicated deals are more likely to experience financial misconduct evidenced by shareholder litigation and earnings restatements after the offering. They argue that these findings are consistent with a relaxation in their screening and certifying functions in the context of the entry of commercial banks into the business.

In addition, it seems that syndication could be affected by the prior relationships, historical and social performances that influence its formation. Chung, Singh & Lee

[3] A range of studies has analyzed the syndicate formation through the perspective and the role played by co-managers (Chen & Ritter, 2000; Davidson, Xie & Xu, 2006; Jeon & Ligon, 2011; Ljungqvist, Marston & Wilhelm, 2009; Rajesh P. Narayanan, Rangan & Rangan, 2004; Popescu & Xu, 2011).

[4] Research studies have examined syndication in the lending market (Francois & Missonier-Piera, 2007; Gatti, Kleimeier, Megginson & Steffanoni, 2013; Godlewski, 2010; Lee & Mullineaux, 2004; Panyagometh & Roberts, 2010; Sufi, 2007b).

(2000) explore syndicate formation in the U.S investment banking industry and conclude that banks are likely to form a syndicate with other banks able to complement their weaknesses. However, they also suggest that «status similarity» of the syndicate members is a fundamental determinant of the syndicate setting when market conditions are uncertain. Based on the Canadian investment banking industry, Baum, Rowley, Shipilov & Chuang (2005) show that banks performing above and below their historical and social aspirations are more likely to engage in new ties while those performing closer to their aspiration levels prefer replicating prior relationships. Chuluun (2015) finds that the network connections – centrality, cohesion, experience and reciprocity – within the syndicate banks affect the fluxes of information and the efforts shared among the underwriters. Furthermore, the competition in the investment industry structure and investment banks' networking relationships also seems to affect the syndicate composition. Asker & Ljungqvist (2010) argue the existence of fluxes of information between issuers and banks due to underwriting securities in the capital markets, in which firms prefer to avoid sharing banks with direct product market rivals, while Huang, Shangguan & Zhang (2008) show that investment banks' networking with investors has implications on firms when deciding whether to employ an investment bank.

As for the strand of the literature more specifically related to the purpose of our investigation, from the issuer-underwriting matching perspective, a number of studies have found that not only reputation but also the existence of previous lending relationships positively affect the likelihood of being chosen as an underwriter (Bharath et al., 2007; Drucker and Puri, 2005; Duarte-Silva, 2010; G. Kanatas and Qi, 1998; Ljungqvist, Marston and Wilhelm, 2006). The general conclusion is that banks with closer relationships with issuing firms are less likely to be expelled in a subsequent offering. These studies also show how firms' relationships carry over across different transaction types like lending, underwriting, mergers and acquisitions. However, most of them suggest that lending relationships affect the choice of an underwriter but not the opposite. Chen, Ho & Weng (2013) find that banks that underwrite a firm's IPO are more likely to provide the issuer with future loans. As relationships are determinants of the underwriting matching and the syndication choice from a relational perspective, these studies connect with the strand of literature focused on the nature of investment banking relationships (Corwin & Stegemoller, 2014; Morrison et al., 2014).

While some studies cover the main determinants of syndicated deals and how relationships affect their formation, there is little evidence in the literature examining whether syndicate size comes to a cost for the issuer. In a recent paper, Levis, Meoli

& Migliorati (2014) find that syndicate size had no effects on charged underwritten fees in UK SEOs during the financial crisis. Peristiani & Santos (2010) analyze the U.S and Eurobond market in order to provide evidence about the gross spread evolution in these markets. They find a statistically significant negative effect of the number of underwriters on the Eurobond market fees during 1995-2006. In the most specific study on this issue, Shivdasani & Song (2011) do not find differences in bond pricing between sole and syndicated deals.

Our paper offers a threefold contribution. Firstly, to the best of our knowledge we are the first empirical study that gives an explanation for the debt underwriting syndication phenomenon by examining how issuers' relationships as well as underwriters' reputational concerns influence the syndicate formation. Secondly, we find that the concentration of these relationships had a different effect on the underwriting choice before and during the crisis. Finally, we find that during the crisis, due to inverse relationships between those factors that favor the syndication choice and at-issue bond yield spreads, issuers self-selected into a sole or syndicated deal and that self-selection led to lower spreads.

3. DATA AND DESCRIPTIVE STATISTICS

Our primary data source for non-financial corporate bonds issued in Europe from January 1, 2003 to January 1, 2014, is the Dealogic Debt Capital Markets database. This database provides detailed information about bond characteristics, including syndicate formation. The sample comprises fixed non-perpetual corporate bond issues, excluding those deals issued by utilities, regulated (SIC: 4000s) or financial firms (SIC: 6000s). We also exclude deals not reporting information about the underwriter parent and issue rating at launch at least for one tranche. The sample period allows us to explore pre-crisis, crisis and post-crisis years.

Firstly, in order to control for issuer characteristics, we match the Dealogic dataset with the information provided about the issuer by Compustat Global. We are able to match each bond issuer with its main accounting information. In order to determine the existence of relationships between issuers and underwriters we also match each bond issuer with its lending information provided by Thomson ONE.[5]

[5] Issuers' identification indicators provided by Dealogic are used to match both databases.

This provides a unique sample with detailed information about bond characteristics, issuer characteristics and lending relationships. In order to track down issuer-bank relationships we account for mergers and acquisitions between underwriters during the sample period. We collect information on M&A activity from Thomson ONE, Lexis-Nexis and banks' own information sources.[6] The database construction and some summary statistics for the sample distinguishing between bond, issuer and syndicate features are offered in Table I. In our framework, the crisis period covers from September 2008 until December 2013. This extended crisis period, compared to the U.S., serves to account for the interbank liquidity crunch and the firm credit crunch in Europe. Furthermore, in terms of quarter-on-quarter changes of seasonally adjusted real GDP, the recession ends in 2013 for Europe. Our final sample includes 1505 deals – structured in 1887 tranches – by 345 unique issuer parents involving 90 underwriters largely representing the European corporate bond markets.[7]

Table II reports the yearly distribution of the sample by number of underwriters. The results highlight the evolution in the number of underwriters placing non-financial corporate bonds over time. Our sample results confirm the increase in the number of underwriters previously reported.[8] The so-called «multiple underwriting» trend is observed. In 2003, the average number of lead underwriters by tranche was 2.5, while in 2013 this average was close to 4. During the period 2003-2005, around 20% of corporate bonds were placed by one lead underwriter, while in 2013 this average was close to 10%. Also, this table shows the rise in terms of volume in the European corporate bond market from 2009.

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[6] We identify prior lending and underwriting relationships accounting for mergers between underwriters. For example, in Bank of America's acquisition of Merrill Lynch on January 1, 2009, we use different codes for the acquired bank and the acquirer before the acquisition. As of the acquisition date, the resulting entity Bank of America Merrill Lynch from absorbs all relationships from both predecessor banks. For exemplification purposes in the Appendix we report the lifetime of two banks that were involved in M&A: Credit Agricole CIB and Commerzbank.

[7] The geographical distribution of the deals is as follows: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, Spain, Sweden and United Kingdom.

[8] Dealogic reported that *«before 2000 the average number of underwriters was close to one».* Furthermore, Thomson Reuters has recently reported that *«In 2000, 89% of European initial public offerings involved a sole bookrunner and the maximum number on any deal was five. This year just 44% involved a single bookrunner and the maximum number on any deal was fifteen.».*

TABLE I
DATABASE CONSTRUCTION AND SAMPLE SUMMARY STATISTICS

Bond Characteristics	Dealogic	Excluding Utilities, Regulated (SIC:4000S) and Financial Firms (SIC:6000S)
Issuer Characteristics	Compustat Global	+ Issuer Accounting information
	Thomson ONE	+ Issuer Lending Relationships

Sample

Bond				**Issuer**			
	Mean	Median			Mean	Median	
Proceeds ($ mill)	621.75	503.50	(1887)	Total Assets ($ bill)	70.39	35.22	(1877)
Maturity (years)	7.40	6.17	(1887)	Total Equity ($ bill)	24.08	11.01	(1873)
Yield (%)	4.71	4.51	(1750)	Leverage	55.59	47.74	(1862)
Coupon (%)	4.68	4.50	(1814)	Net Income ($ bill)	3.91	1.21	(1869)
Gross fees spread (%)	0.56	0.35	(661)	ROA (%)	4.54	4.15	(1868)
Investment Grade	0.85	1	(1887)	Finance Vehicle Issuer	0.41	0	(1887)
Callable	0.25	0	(1887)	First Time Issuer	0.21	0	(1887)
Collateralized	0.03	0	(1887)	Issuer Frequency	15.13	7	(1887)
Private placement	0.09	0	(1887)	Nº Loans (prev. 3 years)	1.20	1	(1887)
Cross Default Issuer	0.42	0	(1887)	Nº Loans (prev. 5 years)	1.95	2	(1887)
Rule 144A	0.14	0	(1887)	Equity & Bond	0.31	0	(1887)

Syndicate			
	Mean	Median	
Nº UW	3.32	3	(1887)
Nº Co-Managers	1.17	0	(1887)
Nº Managers	4.89	4	(1887)
Reputation Top 3	0.08	0	(1887)
Reputation Top 5	0.23	0	(1887)
Reputation Top 7	0.36	0	(1887)

Issuer	437
Issuer Parents	345
Underwriters	90
Nationality	20
Deals	1505
Tranches	1887

TABLE II

FREQUENCY DISTRIBUTION OF SAMPLE BY YEAR AND NUMBER OF UNDERWRITERS

The sample consists of bonds issued by non-financial European firms during 2003–2013, collected from Dealogic Capital Markets excluding bonds issued by utilities and regulated firms (SIC: 4000s) and financial firms (SIC: 6000s). This table reports the yearly distribution of bonds by number of underwriters. The average and median numbers of underwriters are also reported yearly.

		Number of Underwriters									
Year	**% soleUW deals**	**1 UW**	**2 UW**	**3 UW**	**4 UW**	**5 UW**	**6 UW**	**>6 UW**	**Mean**	**Median**	**Total**
2003	23.53%	28	36	33	11	11	0	0	2.50	2	119
2004	16.85%	15	38	21	13	0	2	0	2.45	2	89
2005	27.94%	19	20	20	8	1	0	0	2.29	2	68
2006	12.87%	13	23	38	21	6	0	0	2.84	3	101
2007	14.29%	16	40	31	15	9	1	0	2.68	2.5	112
2008	16.94%	21	47	30	20	6	0	0	2.54	2	124
2009	6.44%	15	50	55	75	23	11	4	2.39	3	233
2010	12.92%	27	58	28	36	27	20	13	3.62	3	209
2011	5.24%	10	55	34	40	26	11	15	3.68	3	191
2012	11.01%	38	80	54	81	31	35	26	3.68	4	345
2013	9.46%	28	66	38	64	44	26	30	3.91	4	296
Total	12.19%	230	513	382	384	184	106	88	3.31	3	1887

Together with the multiple underwriting phenomenon, prior studies have reported an increase in the number of relationships that firms hold. While in the past firms mainly had a relationship with one sole bank, nowadays relationships are less exclusive as firms hold relationships with several banks (Corwin & Stegemoller, 2014). Figure A.I shows that firms have increased the number of relationships they hold in the underwriting industry over time. While in 2003 an average issuer had ties with 2 different banks considering a three-year window, the number of different ties rose to 3.5 in 2013. Regarding the strength of these relationships, Figure A.II reveals that nowadays firms' relationships are less concentrated on a few underwriters.

4. HYPOTHESES AND METHODOLOGY

4.1. The effects of firms' relationships on syndicate decision

We aim to explore how the strength of firms' relationships might affect the choice of syndicate-underwritten vs. single-underwritten bonds. Previous studies argue that issuers' relationships affect the probability of choosing a bank as underwriter (Bharath et al., 2007; Drucker & Puri, 2005; Duarte-Silva, 2010; Gande, Puri & Saunders, 1999; Ljungqvist, Marston & Wilhelm, 2006; Rajesh P. Narayanan, Rangan & Rangan, 2004; Yasuda, 2007). However, there is no evidence on how these relationships might influence the decision on whether to syndicate the issuance or remain with a sole underwriter as well as on the structure of the syndicate formation. Throughout their existence, firms hold relationships with banks even though these transactions may be more or less concentrated. Acknowledging that firms' prior relationships affect the matching, we argue that syndicated bonds are likely to differ by the strength of the issuer's relationships. Holding an exclusive relationship with a single bank or, conversely, with several banks, is likely to generate differences in the decision whether to syndicate or not. Based on the desire to avoid informational spread among syndicate underwriters (Asker & Ljungqvist, 2010) and a potential low certification effort as the syndicate size increases (free-riding problems), we argue that it could be expected that firms that hold strong relationships are less likely to employ a syndicate if they perceive that holding exclusive relationships is more beneficial. Moreover, establishing a new banking relationship is initially costly (Boot, 2000) so these firms would not consider that alternative if they do not foresee any kind of hold-up problems. In contrast, those firms with extensive relationships would be more prone to employ a syndicate as a way of continuing to enjoy the benefits from diversification associated with multiple banks.

A first methodological reference to our empirical study is the choice of single underwriter vs. multiple underwriter of the bond. As in prior studies, (Corwin & Schultz, 2005; Hu & Ritter, 2007; Jeon et al., 2015; Shivdasani & Song, 2011; Song, 2004), the empirical strategy for addressing this question consists of estimating a discrete choice model in which the likelihood of issuing a syndicate-placed bond (rather than a single underwriter choice) is explained by deal, issuer and syndicate characteristics.

$$\mathrm{E}(\text{Multiple Underwritten Deal} \mid \mathrm{X} = \mathrm{x}) = \Lambda\,(\beta_0 + \beta_1 X_{bond\ features} + \beta_2 X_{issuer\ features} + \beta_3 X_{syndicate\ features} + \sum_{h=1}^{h} Year_h + \sum_{k=1}^{k} Deal\ nationality_k + \sum_{m=1}^{m} Industry_m + e_i\,) \quad (1)$$

in which $X_{bond\ features}$ is a vector of variables containing $X_{issuer\ features}$ characteristics of the issuer company, is a vector of variables reflecting the bond's features, and $X_{syndicate\ features}$ is a vector of variables accounting for the characteristics of the syndicate. We include year and country dummies in all our regressions in order to control for variations in debt financing over time and the nationality of the bond respectively. Since in our model the dependent variable is binary, we employ a probit model to estimate the likelihood of issuing a multiple underwritten bond.

Our baseline hypothesis is defined as follows:

H1: *The existent bank-firm relationships at issuance affect the decision on whether or not to syndicate a bond*

Most of the previous studies agree that distribution capability in security underwriting increases as the number of underwriters in a syndicate increases. Financial intermediaries develop extensive networks with investors in the course of their continuous interactions in capital markets. Different kinds of underwriters have relationships with different sets of investors;[9] therefore, adding more underwriters

[9] In this sense, (Chemmanur & Krishnan, 2012; J. M. Griffin, Harris, & Topaloglu, 2007; Jenkinson & Jones, 2007; Neupane & Thapa, 2013) provide empirical evidence about the underwriter-investor relationships. Furthermore, more reputable underwriters hold stronger relationships with institutional investors and a more extensive investor base.

ensures enlarging the base of potential investors. As distribution capabilities are strengthened, it is expected that the deals that entail more placement complexity will be underwritten by several banks. In this sense, bond characteristics are particularly important in explaining the syndicate size. The natural logarithm of the deal proceeds is used as proxy of the *bond size*. The complexity of the marketing, pricing and selling activities increases with the size of the offering. *Bond maturity*– the natural logarithm of the years to mature – is also included in the equation to capture how the relationship between maturity and risk affects the choice. A dummy for callable bonds is also considered. Furthermore, we have included proxies of issuers' quality, *bond rating* and *issuer rating*[10] to test the impact of bond and issuer quality on the choice of single- versus syndicate-underwritten deals. It could be the case that issuers employ the syndicate to place low-rated bonds as a sole bank would reject taking all the risks of such a deal. Conversely, Shivdasani & Song (2011) argue that if low-quality issuers need stronger certification they choose a sole underwriter, which would support a deterioration in the certification function in syndicated deals.

Regarding issuer characteristics, along with issuers' ratings, we also include *firm size*, as the natural logarithm of the total assets of the company at the end of the year before the issue. In order to assess how the financial structure of the company could affect influence we include a proxy for firm *leverage,* measured with a debt-to-equity ratio and firm profitability, measured by the *Return on Assets (ROA)*.[11] We also account for issuer experience in the capital markets, including the dummy *first-time issuer* - taking the value 1 if the issuer did not issue any corporate bond from 1988 to 2003 and zero otherwise. In addition, many corporate bonds are issued by a *finance vehicle*, a company in charge of issuing capital market instruments in the financial markets on behalf of their parent. We control for this fact, not previously considered in the literature, since the specialization issuing debt instruments of finance vehicles might affect the syndicate formation. Their own specialization may lead them to require a lower number of underwriters. As prior studies suggest that underwriters could have been substituted by adding extra co-managers, we include the *number of co-managers* as an explanatory variable. Furthermore, we control for *Underwriter reputation*, proxied by the average mar-

[10] Bond rating and Issuer rating are included in separate regressions to avoid multicollinearity problems due to their correlation (Variance Inflation Factor between Bond rating and Issuer rating = 18.08).

[11] All the accounting values were collected at the end of the year before the issuance.

ket share of the underwriters,[12] since a number of studies have agreed on reputation being determinant in the matching (Benveniste et al., 2003; Drucker and Puri, 2005; Hoberg, 2007; Kanatas and Qi, 2003; Ljungqvist et al., 2006; Yasuda, 2007; Fernando et al,. 2015; Fernando et al., 2012). Consistent with extant studies (Bharath et al., 2007; Drucker and Puri, 2005; Duarte-Silva, 2010; G. Kanatas and Qi, 1998; Ljungqvist, Marston and Wilhelm, 2006) prior ties with an underwriter affect current underwriter choice. We account for prior underwriting relationships controlling whether the current underwriter was previously appointed as bond underwriter. We also consider other kinds of prior ties, such as co-manager. Furthermore, since studies on the effects of cross-market relationships have documented the relevance of previous and concurrent lending relationships as determinants of the matching, we include a variable that controls for prior lending relationships between the issuer and the underwriter. Finally, we have also accounted for the «timing of the issue» with the dummy *simultaneity* that captures whether there was a high volume of offerings in the European capital markets at the issue date. In this sense, Gunay & Ursel (2015) argue that in periods in which offerings are highly concentrated a relationship with an underwriter helps the issuer to ensure access to underwriting services.

Another fundamental issue is the impact of the crisis on the choice of sole vs. syndicated deals. We formulate a second hypothesis as follows:

H2: *Firms that hold exclusive (concentrated and not diversified) relationships with banks are less likely to employ a syndicate if they do not perceive a risk of facing hold-up problems.*

The recent financial crisis may help to explain a switch to a syndicate choice for firms that were highly dependent on single-bank relationships before the crisis. Farinha & Santos (2002) show that firms switch from single to multiple relationships when they are concerned about hold-up costs. In this sense, Gopalan, Udell & Yerramilli (2011) suggest that firms form new banking relationships to expand their access to credit and capital market services. Relationships seem to be valuable during a financial crisis (Sette & Gobbi, 2015) but the climate of uncertainty and credit contraction is likely to awaken interest in reducing their single banking dependence.

[12] Market shares are collected from Annual League Tables provided by Dealogic. In multiple underwritten deals proceeds are equally apportioned among the underwriters.

The financial crisis may have accentuated how firms perceive the risks of hold-up problems associated with exclusive relationships. This would be in line with (Gopalan et al., 2011)'s findings on access to credit and capital market services. In this sense, we expect that the perception of firms that a banking and financial crisis exposes them to credit restrictions is likely to alter the decision of choosing a syndicate rather than a sole underwriter. It is important to note that we do not explore the role of bank-firm relationships in choosing syndicated underwriting, which according to the literature increases the likelihood of choosing a syndicate. What we examine is how the concentration of these relationships affects the underwriting choice before and during the crisis. The crisis effect is considered by interacting our variable of relationship strength with a crisis dummy that takes the value 1 for issues made from September 2008 to December 2013.

Thus, in order to account for this fact, we have used a measure of bank relationship strength (a relational Herfindahl Index). This index is built for each issuer at the issue. In doing so, we track all the loans granted to each issuer in the two years previous to the bond issuance.[13] We calculate the portion of the issuer's total loan proceeds for each loan supplier that lead managed[14] at least one loan for that particular issuer. And finally, we sum the square values of these «market shares» to obtain the relational Herfindahl Index. A large value would mean that the issuer has highly concentrated lending relationships.

After examining how a concentration of firms' relationships affects the decision to syndicate, another important, related issue is which underwriter is chosen from among the set of potential banks. Which banks are more likely to underwrite the offering? Here we explore the role of bank-firm relationships in being chosen.

Although these relationships increase the likelihood of being chosen (Bharath et al., 2007; Drucker and Puri, 2005; Duarte-Silva, 2010; G. Kanatas and Qi, 1998; Ljungqvist, Marston and Wilhelm, 2006) their impact on the choice might differ over time. Regarding credit supply, there is evidence of the greater effects of relationship

[13] In reported regressions, we use an alternative measure considering a larger time window (3 years before the bond issuance). Results remain robust after using a three-year window.

[14] Using measures of bank relationship strength based on prior bond issuances would not be appropriate. Firstly, because that way of proceeding would introduce endogeneity in our model since prior syndication choices will affect the Herfindhal considered in later bond issuances. And secondly, because lending restrictions during the crisis are what accentuated the risks of hold-up problems.

lending when firms are exposed to financial uncertainty and difficulties (Sette & Gobbi, 2015). Prior studies have also shown that relationships have been valuable during the recent financial turmoil.[15] Moreover, since the crisis emerged the investment banking industry has argued that a rewarding mechanism that was put into practice might explain the multiple underwriting phenomenon. Some investment bank chiefs report that, during the financial crisis, appointing a lending relationship bank as underwriter was more likely than before. A chief investment banker reported to the Financial Times: *«There may be, say, 12 joint bookrunners on a large M&A deal, but only a subset of those will be active, effectively rewarding relationships without compromising the execution of the transaction».*[16] This way of proceeding would have led firms to respond to the gesture, including them as bond underwriter because it *«is an easy and also very visible way of rewarding them».* That therefore implies that lending to a firm during a banking crisis, in which there are credit constraints, is valuable for the bank because it then translates into winning future underwriting mandates. This leads us to explore our hypothesis on the effects of firms' relationships on syndicate decisions before and during the financial crisis.

In order to address this issue, we have built a model of the decision to choose a bank as bond underwriter from a set of potential underwriters. The choice set includes all banks with at least one bond underwritten in the year of the bond issuance.

$$\mathrm{E(Y\,|X=x)} = \Pr(Chosen\ UW = 1|\,\mathrm{X}) = \Lambda\,(\beta_0 + \beta_1 X_{bond\ features} + \beta_2 X_{issuer\ features} + \beta_3 X_{underwriter\ features} + \beta_4 X_{issuer-underwriter\ relationships} + \sum_{h=1}^{h} Year_h + \sum_{k=1}^{k} Deal\ nationality_k + \sum_{m=1}^{m} Industry_m + e_i\,) \quad (2)$$

We use a probit model to examine the issuer-underwriter matching probability, accounting for bond, issuer and underwriter features. Our dependent variable is a

[15] See among others Alexandre, Bouaiss & Refait-Alexandre (2014); Dewally & Shao (2014); Kahle & Stulz (2013).
[16] Extracted from the Financial Times (Gavin Jackson, 17 June 2015) Banks prosper from euro company debt rush. www.ft.com/markets

dummy taking the value 1 if the bank is chosen among the set of potential underwriters. Instead of using a conditional probit model, we use a probit model since more than one underwriter could be chosen on a bond. Using a conditional probit model, an extension of the multinomial logit model, would mean assuming that choice probabilities satisfy an independence of irrelevant alternatives (or IIA) property. This is an assumption that could not be maintained in our data since two underwriters could present similar characteristics with their errors correlated. This could be solved using a nested model if there were just sole underwritten deals in which each issuer chose just one underwriter, which is not the case we are studying. Using Amemiya (1974) as starting point, who considers that the desirable technique in a situation like ours is to estimate a probit, we follow Corwin & Schultz (2005) and Sufi (2007), and employ a probit model to determine the likelihood that specific underwriters are included in a syndicate. We include one observation for every potential underwriter for each bond, after accounting for all the mergers and acquisitions during our research period. In estimating the probit model, as Sufi (2007) highlights, if an underwriter is chosen on a deal it may affect whether or not another underwriter is chosen on this same deal. We therefore allow for correlation across all the eligible underwriters in a specific deal.

We employ three variables that capture the existence and strength of previous lending relationships between the issuer and each bank from the set of eligible underwriters. First, we employ *Lender Mkt. Share,* which is the proportion of the issuer's total loan proceeds for which the underwriter bank was appointed as Lead Manager. These market shares are computed splitting the loan value equally between all lead managers in multiple syndicated loans. Then we use a discrete variable named *Prior Lender* which takes the value 1 if the underwriter bank has taken the role of Lead Manager in a previous issuer's loan. After that, our measure *Max. Relationship Lende*r captures the strength of the issuer-underwriter relationship. It is a dummy, taking the value 1 if the underwriter for the issuer is the bank with the largest lender market shares. If more than one underwriter holds the same largest market share, then none of them is considered the *Max. Relationship Lender*, thus the dummy takes the value zero. In our analysis we examine these relationships in a two-year window before the issuance date, consistent with related studies on prior relationships (Sufi, 2004).[17] For robustness purposes, in

[17] A large time window would bias our results as the effects of recent lending relationships over time could vanish. Furthermore, the changing nature of investment banking relationships in which firms hold new, more diversified and less exclusive relationships in more recent years (Corwin & Stegemoller, 2014) does not suggest using a larger time window.

order to capture better the effect of closer lending relationships in the crisis scenario, we subsequently consider a one-year window.

Furthermore, as previous underwriting relationships also affect the underwriting choice, we include *UW Mkt. Share, Prior UW and Max. Relationship UW,* which are respectively the proportion of the firm's total bond proceeds issued for which the underwriter bank was appointed as Underwriter, a dummy taking the value 1 for previously appointed underwriters, and a dummy taking the value 1 if for the firm the underwriter is the one with the largest underwriter market share. We expect them to be positive and statistically significant.

Besides this, and consistent with prior literature, we control for others factors likely to affect the matching. Together with those bond and issuer characteristics that influence the matching, we have considered some underwriter characteristics. Reputation attracts business, which is why we expect a positive and significant coefficient for *underwriter reputation*, which is built using the market shares on apportioned proceeds.[18] Furthermore, as geographical proximity[19] also affects the matching between the issuer and the underwriter, we consider *shared nationality,* which is a dummy taking the value 1 if the underwriter and the issuer are located in the same country. In addition, underwriter industry specialization is likely to generate information spillovers if there is a concentration of issuance in an industry during a short period (Booth & Chua, 1996). This specialization is likely to affect the prospect of being chosen as underwriter in future issuances. We account for this factor including a measure of *underwriter industry specialization*.[20] In the literature there is mixed evidence: Dunbar (2000) reports that for well-established and reputable underwriters diversification is beneficial. Finally, the impact of the crisis on the underwriter choice is captured by the interaction of the main explanatory variables with the crisis dummy.

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[18] In unreported regressions we employ two different discrete measures of UW reputation (UW Top 5 and UW Top 7) to control for the oligopolistic structure of the underwriter industry due to the presence of the traditional bulge-bracket investment banks. Results are qualitatively similar.

[19] Corwin & Schultz (2005) show that underwriters located closer to the issuer (same U.S state) are more likely to be included in the IPO syndicate, while Sufi (2007) in the syndicate loan market reveals that being in the same region as the firm increases the probability of being chosen as a participant by 6.7%.

[20] *Underwriter industry specialization* is measured using a Herfindhal index. This index is calculated for each underwriter as $\cdot \Sigma_{i=1}^{n} \left(\frac{g_i}{G}\right)^2 \cdot g_i$. is the gross proceeds issued by the underwriter in the 2 digit SIC-industry i and G is the total gross proceeds issued by the underwriter.

4.2. The syndicate formation: Determinants of the syndicate size

After studying the syndication vs. sole-underwriting choice as well as the determinants of being chosen as underwriter, we are interested in studying how syndicates are set, and how reputation can affect the syndicate formation.

Firstly, we examine what the main determinants and features of the syndicate size are. As before, the empirical strategy for addressing this question consists in estimating a model capable of explaining the syndicate size. Consistent with prior literature, we employ models in which the likelihood of issuing a syndicate-underwritten bond is explained by deal, issuer and syndicate characteristics. All the variables contained in $X_{bond\ features}$, $X_{issuer\ features}$ and $X_{syndicate\ features}$ accounting for characteristics of the bond, issuer and syndicate, respectively, have been discussed above.

$$\mathrm{E}(\text{Nº of Underwriters} \mid \mathrm{X} = \mathrm{x}) = \Lambda\,(\beta_0 + \beta_1 X_{bond\ features} + \beta_2 X_{issuer\ features} + \beta_1 X_{syndicate\ features} + \sum_{h=1}^{h} Year_h + \sum_{k=1}^{k} Deal\ nationality_k + \sum_{m=1}^{m} Industry_m + e_i\,) \quad (3)$$

Now, in our model the dependent variable is the number of banks appointed as underwriters in a deal, so it takes integers from one to sixteen – the largest underwriter syndicate in our sample. A zero-truncated Poisson model designed for count data, in which the dependent is a non-zero positive value, is employed. Instead of using a Poisson or negative binomial model, a zero-truncated Poisson model is preferred because the Poisson and the negative binomial fit the models by including probabilities for zero values even though there are no zero values in our data. Moreover, a zero-truncated negative binomial would be desirable if there were over-dispersion in our data in addition to zero truncation, which is not the case. Together with this count data model, since the theory suggests issuers could be in a sole underwritten deal regime or in an underwriting syndication, we employ a two-stage estimation methodology.[21] In the first stage, we use a probit model in which the dependent variable takes the value 1 if the bond is a syndicated deal, while in

[21] Detragiache, Garella & Guiso (2000) employ a similar two-stage estimation strategy to examine the optimal number of banking relationships that a bank employs.

the second stage we estimate the syndicate size in multiple syndicated bonds using an OLS method. In this second stage we include the inverse Mills ratio to correct for self-selection bias.

4.3. What determines joining an underwriting syndicate?

In the second stage we investigate the syndicate setting from the perspective of the underwriter. Most previous studies have examined the determinants of multiple underwritten deals from the issuer level or related to bond characteristics, while there is little evidence on the underwriter perspective.

Studies that have examined the determinants of multiple underwritten deals by using a bond level analysis provide insights into how issuer-underwriter relationships affect the matching but they tend to omit the underwriter's perspective.[22] Corwin & Schultz (2005)[23] and Tunick (2004)[24] report, from conversations with investment bankers, that underwriters would always prefer to be the sole deal underwriter. They argue that including several underwriters is an issuer demand. From the underwriters' perspective there are several reasons that motivate this preference. First of all, this is mainly because a sole underwriter collects all the fees. Secondly, because not being a sole underwriter penalizes them when league tables are computed. In the case of syndication, the proceeds are shared between all the syndicate underwriters even if the others were passive underwriters. This is not trivial since there is evidence on the importance in terms of reputation of published «league tables» (Ang & Zhang, 2004; Golubov, Petmezas & Travlos, 2012; J. Griffin, Lowery & Saretto, 2014; Jeon et al., 2015). However, although a joint-underwriting appointment is tempting because a joint role is better than being excluded, there are also some factors likely to restrain them from

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[22] Prior literature has recognized the importance of previous and current relationships on the firm-underwriter matching. Seminal papers about the «relationship specific capital»: (James, 1992; Rajan, 1992). Empirical papers (Burch, Nanda & Warther, 2005; Drucker & Puri, 2005c; Rajesh P. Narayanan et al., 2004b; Roten & Mullineaux, 2002; Schenone, 2004; Yasuda, 2005)

[23] Corwin & Schultz (2005)*: «As one investment banker told us, 'if we're the lead [underwriter], the best number of co-managers is zero'.»*

[24] Tunick (2004)*: «Moreover, these bankers claim that it's issuers who are demanding the multiple bookrunners. 'It's the way the world is evolving, and it's what clients are demanding, so it's hard to be bitter toward an evolutionary trend that's being demanded by the marketplace,' says an equity banker . . . In the end, however, he says joint and multiple bookrunning is actually in the best interest of the issuer because it ensures the greatest distribution of its deals.»*

engaging in the deal. Consequently, with this perspective in this section we investigate what determinants affect the decision of joining a syndicate.

In our empirical approach we treat each underwriter in a multiple underwritten deal as a different observation. This methodology allows us to examine the syndication determinants from an underwriter perspective. Furthermore, we consider that this way of proceeding offers a better understanding of the issuer-underwriter matching. Within the syndicate, we are able to disentangle the specific ties between the underwriters and also between the issuer and each underwriter. In our specification, we include bonds and issuers' features and, in particular, underwriters' characteristics.

$$\mathrm{E}(\text{Multiple Underwritten Deal} \mid \mathrm{X} = \mathrm{x}) = \Lambda\,(\beta_0 + \beta_1 X_{bond\ features} + \beta_2 X_{issuer\ features} + \beta_1 X_{underwriter\ features} + \sum_{h=1}^{h} Year_h + \sum_{k=1}^{k} Deal\ nationality_k + \sum_{m=1}^{m} Industry_m + e_i\,) \quad (4)$$

As discussed earlier, previous studies highlight the concerns of underwriters for maintaining reputational status. Reputation is crucial for underwriters in capital markets. Reputable underwriters are believed to reduce information asymmetries more efficiently as credible certifiers (Beatty and Ritter, 1986; Booth and Smith, 1986; Carter and Manaster, 1990; Chemmanur and Fulghieri, 1994). It could be argued that more reputable banks would be less likely to accept forming a syndicate when their reputation may be at stake. Nevertheless, as suggested by Shivdasani & Song (2011), the increased competition in the underwriting industry could have partially removed the reputational concern, leading reputable banks to accept enrolling in a joint-underwriting deal despite assuming that their reputation could be at stake. The effect of reputation in the syndicate formation is likely to be present. In line with a long and consolidated literature that argues in favor of the sound certification hypothesis, we hypothesize that highly reputable banks will not participate in a syndicated deal if their counterparts are less reputable. If this hypothesis is accepted, we argue that avoiding putting the deal success and consequently their reputation at stake is what motivates this way of acting. Hence, the following certification (reputation) hypothesis would be confirmed:

H3: *Reputable banks are less likely to join a syndicated deal if their counterparts are less reputable underwriters*

As part of our identification strategy, we include variables that measure the underwriter reputation compared to average market standards. Large values of this variable mean that the underwriter is relatively more reputable than an average underwriter in the market. In this sense, consistent with the certification hypothesis that reputable banks are highly concerned to maintain their reputation, we expect that as distance increases banks would be less likely to join in a syndicate.

$$\text{Underwriter}_i \text{ Reputational distance} = \frac{Mkt\ share_{i,t} - \overline{Mkt\ share_t}}{Standard\ Dev\ MS_t}$$

Additionally, the relative weight that the bond entails for each underwriter is considered on a monthly basis.[25] If this ratio is close to 1, it means the underwriter is putting all its current underwriting capacities on that specific bond. We expect a negative sign. Firstly, due to capacity constraints, if an underwriter is busy placing many bonds simultaneously it would be more prone to accept joint-syndicates. And then, if a bond takes all an underwriter's attention, it is likely to argue that it would put their best know-how into it, so a joint syndication would be undesirable as their efforts for the issuer are less visible in a syndicate.

$$\text{UW Rel. bond weight}_{i,h} = \frac{Total\ proceeds_{i,h}}{Total\ proceeds_{i,h,m}}$$

Following Hu & Ritter (2007), we include an adaptation of their *«relative pipeline»* in order to measure how busy an underwriter is given its reputation and market condition. A positive value means that underwriters are more likely to join a syndicate if they are working at their full capacity. We also consider their *DistanceMS* variable. A negative coefficient would be interpreted as that, given the bond size, reputable banks are less likely to be part of the syndicated deal. Finally, in order to check the effect of the reputation in the syndicate decision we interact UW Reputational distance and DistanceMS with a dummy that takes the value 1 for the Top 5 reputable underwriters.[26]

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[25] This measure is monthly because the underwriting process lasts around 4 – 5 weeks without including the market stabilization phase. However, we also considered other time windows in unreported regressions. After considering a week and a quarter- time window results remain robust.

[26] We use a Top 5 UW because it could be considered as Highly Reputable in the European context. In this sense, Dealogic reports that from 2003 – 2013, the Top 3 UWs in the corporate bond markets in the United States hold a market share (37.37%) similar to the Top 5 in Europe (32.87%). However, for robustness purposes we have also employed a Top 7 dummy and results are similar.

$$Relative\ Pipeline = \frac{\frac{Nº\ bonds\ in\ process}{Total\ nº\ of\ bonds\ the\ UW\ has\ issued\ in\ year\ t}}{UW\ market\ share\ x\ Total\ Proceeds\ issued\ in\ all\ Fixed\ Corp.Bonds\ in\ year\ t}$$

$$DistanceMS_i = \frac{Mkt\ share_{i,t} - \overline{Mkt\ share_t}}{Standard\ Dev\ MS_t} - \frac{Bond\ Size - \overline{Bond\ Size_t}}{Standard\ Dev\ Size_t}$$

4.4. Does syndication come at a cost?

The third research question is whether syndication comes at a cost for issuers and investors. The positive relationship between firm visibility and syndicate-placed deals together with the chance of reaching a large number of investors are some of the benefits of syndication (Jeon et al., 2015). In this sense, as mentioned above, underwriting syndication can be considered partially a response to issuers' demand. However, we wonder if there is a trade-off between the potential benefits and the funding costs of choosing multiple underwritten deals. It could be argued that multiple underwritten deals would have to pay an extra cost if investors believed those deals had a reputation problem originated by low screening. If, as we expect, reputable banks are less likely to join a syndicate when their reputation might be at stake, we can conclude that the syndicate formation is driven by underwriters' concerns for maintaining reputational status. That reputational concern might relax as syndicate size increases, since large syndicates are on average less reputable. Furthermore, since the crisis emerged the role of lending relationships on the underwriter choice seems to have become more relevant, as we have predicted. In this sense, the existence of biases due to issuers' self-selection into sole or syndicated deals is likely to be present in this period. In addition, if, as we predict, firms' lending relationships affect the underwriting choice, we would expect to find this effect for syndicated bonds due to the self-selection. In order to address this self-selection, we employ a Heckman (1979) model as the choice of the syndicate structure is likely to be endogenous. We first estimate a probit model on the syndication choice and we obtain the inverse mills ratio. This ratio is then used as one of the regressors in the second-stage equation to produce consistent estimates. Our dependent variable in the second stage is the bond spread at launch, which is the difference between the yields of the bond and a benchmark treasury bond expressed in basis points.

1st stage:

$$\Pr(\text{Syndicated Bond} = 1 \mid X = x) = \Lambda\,(\beta_0 + \beta_1 X_{bond\ features} + \beta_2 X_{issuer\ features} + \beta_3 X_{syndicate\ features} + \sum_{h=1}^{h} Year_h + \sum_{k=1}^{k} Deal\ nationality_k + \sum_{m=1}^{m} Industry_m + e_i\,) \quad (5)$$

2nd stage:

$$\text{Bond Spread (bps)} = \beta_0 + \beta_1 X_{bond\ features} + \beta_2 X_{issuer\ features} + Inverse\ Mills\ Ratio + \sum_{h=1}^{h} Year_h + \sum_{k=1}^{k} Deal\ nationality_k + \sum_{m=1}^{m} Industry_m + e_i \quad (6)$$

5. RESULTS

5.1. The effects of firms' relationships on syndicate decision

Table III offers some descriptive statistics comparing sole and multiple underwritten bonds. We test for differences in means (t-statistics) and in medians (Wilcoxon rank sum statistics) between the two groups in bond, issuer and syndicate characteristics. Consistent with earlier studies on multiple underwriting, these tests reveal that bonds placed by more than one underwriter are significantly different from those placed by just one bank in several aspects. In particular, multiple underwritten bonds appear to be large in size.[27] We also find that callable bonds with longer maturity are more likely to have multiple underwriters. This is consistent with our expectations that long-term[28] and callable bonds are more complex in order to bring them into market. It is also worth noting that domestic bonds are mostly placed by just one underwriter while international bonds are pla-

[27] Shivdasani & Song (2011) and Jeon, Lee, Nasser & Via (2015) obtain similar results for issue size using also mean- and median-difference tests for corporate bonds and IPOs respectively.

[28] Shivdasani & Song (2011) also find that bonds with longer maturity are more likely to be placed by more than one underwriter.

ced by a syndicate. As international bonds are mainly oriented to large investors, hiring more underwriters in order to reach a greater base of potential investors seems to make sense. At the issuer level, multiple underwritten bonds are frequently issued by larger firms, in terms both of total assets and market capitalization. However, firms placing their bonds with just one underwriter are more frequent issuers no matter if the issuance is computed at a subsidiary or a parent level. Additionally, issuers that during the same natural year have obtained a loan as well as issued a bond are more likely to have multiple underwriters, whereas this is not the case if they have issued equity.

Regarding syndicate characteristics, according to mean- and median-difference tests, issuers that hire just one underwriter tend to include more co-managers (an average of 1.98 co-managers) compared to those that hire several underwriters. As for the average syndicate reputation, using market share as an accurate proxy for reputation[29], this seems to be larger for multiple underwritten bonds. However, the highly reputable underwriters, the Top 3 underwriters, are less likely to join a syndicate. Finally, it seems that prior issuer-underwriter relationships are more frequent in multiple underwritten bonds, as is shown using several time windows.

[29] See among others (Andres, Betzer, & Limbach, 2014; Esho, Kollo, & Sharpe, 2006; Fang, 2005; Gande et al., 1997; Iannotta & Navone, 2008; Livingston & Miller, 2000; McCahery & Schwienbacher, 2010; Megginson & Weiss, 1991; R. P. Narayanan, Rangan, & Rangan, 2006; Ross, 2010; Roten & Mullineaux, 2002; Schenone, 2004; Yasuda, 2005).

TABLE III
UNIVARIATE STATISTICS BY NUMBER OF UNDERWRITERS

This table reports the descriptive statistics for our sample of non-financial corporate bonds in Europe during 2003 - 2013 by number of deal underwriters. Mean and median values are reported for deals underwritten by one (sole UW bond) and more than one underwriter (multiple UW bond). We have reported variables that refer specifically to the bond, the issuer and the syndicate. We use two tails t-test for difference in means between the two groups of corporate bonds and Wilcoxom Mann- Whitney test is used for medians. *, **, *** Different is significant at less than 10 %, 5%, 1% level.

Bond characteristics	Sole UW bond			Multiple UW bond		
	Mean	**Median**	**Obs**	**Mean**	**Median**	**Obs**
Issue size ($ mill)	182.97	128.21	230	682.65***	605.96***	1657
Maturity (years)	7.09	5.51	230	7.45	6.63**	1657
Coupon (%)	5.07	4.88	215	4.63***	4.45***	1599
Investment Grade (0 | 1)	0.78	1	230	0.86***	1.00***	1657
Cross Default Issuer (0 | 1)	0.43	0	230	0.42	0.00	1657
Make Whole Call (0 | 1)	0.06	0	230	0.20***	0.00***	1657
Spread benchmark (%)	2.57	1.9	51	2.29	1.69	1273
Fungible (0 | 1)	0.31	0	230	0.17***	0.00***	1657
Callable (0 | 1)	0.19	0	230	0.26***	0.00**	1657
Collateralized (0 | 1)	0.05	0	230	0.02**	0.00***	1657
Private Placement (0 | 1)	0.23	0	230	0.07***	0.00***	1657
International Placement (0 | 1)	0.73	1	230	0.92***	1.00***	1657
Domestic Placement (0 | 1)	0.24	0	230	0.06***	0.00***	1657
SEC (0 | 1)	0.03	0	224	0.10***	0.00***	1563
Rule 144A (0 | 1)	0.11	0	230	0.14	0.00	1657
Issuer characteristics	**Mean**	**Median**	**Obs**	**Mean**	**Median**	**Obs**
Total Assets ($ bill)	62.35	19.18	230	71.51*	36.60***	1647
Total Liabilities ($ bill)	39.48	9.46	228	46.23**	22.78***	1646
Total Equity ($ bill)	21.77	4.74	228	24.37	11.33***	1645
Leverage	53.60	43.99	226	55.87	48.05	1636
Net income ($ bill)	4.23	0.45	228	3.86	1.26**	1641
ROA (%)	4.27	4.65	228	4.58	4.13	1640
Stock Market Value ($ bill)	52.84	9.80	220	42.99**	20.29**	1559
First Issuer (0 | 1)	0.26	0	230	0.21	0.00*	1657
Issuer Frequency	27.36	6	230	13.43***	7.00	1657
Issuer Parent Frequency	35.83	7	230	18.21***	10.00	1657
Equity&Bond (0 | 1)	0.33	0	230	0.31	0.00	1657
Loan&Bond (0 | 1)	0.51	1	230	0.59**	1.00**	1657
Syndicate characteristics	**Mean**	**Median**	**Obs**	**Mean**	**Median**	**Obs**
UW previous deal [1 year] (0 | 1)	0.37	0	230	0.43*	0.00*	1657
UW previous deal [3 years] (0 | 1)	0.48	0	230	0.66***	1.00***	1657
UW previous deal [5 years] (0 | 1)	0.52	1	230	0.75***	1.00***	1657
Nº UW	1.00	1	230	3.64***	3.00***	1657
Nº Co-manager	1.98	0	230	1.06***	0.00***	1657
Nº Manager	3.60	1	230	5.06***	4.00***	1657
Avg. UW Syndicate Reputation	3.74	3.35	230	5.02***	4.97***	1657
Reputable UW Top 3 (0 | 1)	0.11	0	230	0.07*	0.00*	1657
Reputable UW Top 5 (0 | 1)	0.17	0	230	0.24**	0.00**	1657
Reputable UW Top 7 (0 | 1)	0.26	0	230	0.37***	0.00***	1657
Relative Issue size [week]	0.18	0.06	230	0.20	0.14***	1657
Relative Issue size [month]	0.03	0.01	230	0.06***	0.04***	1657
Relative Issue size [quarter]	0.01	0.00	230	0.02***	0.01***	1657
UW lender [1 year] (0 | 1)	0.09	0	230	0.25***	0.00***	1657
UW lender [3 years] (0 | 1)	0.14	0	230	0.51***	1.00***	1657
UW lender [5 years] (0 | 1)	0.17	0	230	0.61***	1.00***	1657

TABLE IV
DETERMINANTS OF MULTIPLE UNDERWRITEN DEALS

This table presents the coefficients and the z-statistics for the Probit regressions on syndicate choice. The dependent variable is a binary variable that takes the value 1 if the bond is placed by multiple underwriters. Z-statistics are based on issuer clustered standard errors. A constant term (not reported) is included in all regressions. *, **, *** Coefficients are statistically significant different than zero at least at 10 %, 5% and 1% levels.

	Dep. Var: Multiple Underwritten Deal (0 | 1)			
	(1)	(2)	(3)	(4)
VARIABLES	Probit- Bond Rating	Probit- Issuer Rating	Probit – Strength Rel. - Bond Rating	Probit - Strength Rel. - Issuer Rating
Issue size	0.950***	1.027***	0.942***	1.002***
	(0.0958)	(0.100)	(0.102)	(0.109)
Maturity	-0.0823	0.0378	-0.165	-0.0541
	(0.168)	(0.173)	(0.149)	(0.155)
Callability	-0.206	0.226	-0.173	0.251
	(0.211)	(0.237)	(0.218)	(0.241)
Bond Rating	-0.0454	-	-0.0360	-
	(0.0422)		(0.0397)	
Issuer Rating	-	-0.00939	-	0.0151
		(0.0547)		(0.0515)
Domestic Placement	-0.851**	-0.984***	-0.825**	-1.016***
	(0.375)	(0.327)	(0.367)	(0.324)
Issuer Size	-0.0536	-0.0182	-0.0529	-0.0375
	(0.0785)	(0.111)	(0.0760)	(0.109)
Leverage	-0.00307*	-0.00406	-0.00270	-0.00344
	(0.00168)	(0.00305)	(0.00166)	(0.00287)
ROA	0.0633***	0.0645**	0.0554***	0.0486*
	(0.0189)	(0.0258)	(0.0205)	(0.0269)
Finance Vehicle	-0.189	-0.159	-0.217	-0.178
	(0.193)	(0.226)	(0.201)	(0.227)
First time-issuer	0.291	0.0335	0.287	0.112
	(0.229)	(0.259)	(0.222)	(0.264)
Nº Co-Managers	-0.0642***	-0.0783***	-0.0641***	-0.0787***
	(0.0206)	(0.0157)	(0.0193)	(0.0157)
UW Syndicate Reputation	-0.0261	-0.0331	-0.00891	-0.0235
	(0.0283)	(0.0320)	(0.0281)	(0.0321)
Market Simultaneity	0.170***	0.224***	0.131***	0.187**
	(0.0447)	(0.0750)	(0.0421)	(0.0745)
UW previous co-manager	0.374**	0.419**	0.342*	0.339
	(0.162)	(0.199)	(0.181)	(0.206)
UW previous bond UW	0.431***	0.399**	0.421***	0.408**
	(0.160)	(0.157)	(0.163)	(0.161)
UW previous lender	0.683***	0.821***	0.714***	0.836***
	(0.205)	(0.240)	(0.196)	(0.217)
Relational HHI			-1.332***	-1.295***
			(0.375)	(0.410)
Relational HHI*Crisis			3.037***	3.412***
			(0.802)	(1.087)
Observations	1,629	1,412	1,629	1,412
Year	Yes	Yes	Crisis Dummy	Crisis Dummy
Industries	Yes	Yes	Yes	Yes
Countries	Yes	Yes	Yes	Yes
Standard Errors	Clustered	Clustered	Clustered	Clustered
Pseudo R2	0.4557	0.5175	0.4644	0.5215
Log-Likelihood	-303.57918	-230.67968	-298.75259	-228.73132
p-value (chi2)	0.00	0.00	0.00	0.00

We investigate the determinants of multiple underwritten bonds accounting for deal, issuer and syndicate characteristics using a probit multivariate model. The estimation results are shown in Table IV. In order to address the potential correlation in the residuals, since in our sample some firms issue several bonds, we allow for firm-specific effects clustering standard errors on issuers. We find that bonds with large proceeds are more likely to be placed by a syndicate. This is consistent with the size hypothesis that argues that large issues entail a higher complexity to be placed among investors because greater distribution capabilities are required. In large proceeds bonds, hiring more underwriters is believed to facilitate the distribution because that enlarges the base of potential investors. After controlling for other factors, maturity and callability are not statistically significant determinants of multiple underwritten deals. Bonds denominated in the national currency of the issuer and sold into the domestic market – domestic bonds – are less likely to be placed by several underwriters. This latter result supports the view that the smaller distribution efforts of domestic deals would justify choosing just one underwriter rather than a syndicate.[30]

There is no evidence suggesting that firm size[31] is a significant determinant of multiple underwritten deals. Additionally, after controlling for other factors, we find that a lower number of co-managers are observed for multiple underwritten deals and that syndicated deals are more likely to be integrated by a prior co-manager. This supports the substitution effect in Jeon et al. (2015). In contrast to Shivdasani & Song (2011), who report a lower underwriter reputation in syndicate deals, we find that, after controlling for other factors, the syndicate reputation is not statistically different between sole and multiple underwritten bonds. Sole and multiple underwritten bonds do not differ in terms of reputation. This result suggests that reputable underwriters are not just involved in sole underwritten bonds but they also participate in syndicates. We then examine who their counterparts are in multiple underwritten bonds. Furthermore, bond and issuer ratings are not significant; therefore, sole underwritten deals are not likely to be related to high-quality firms or high-quality issuances. It seems that underwriting syndication is not used exclusively by low-quality issuers searching for more certification. Additionally, previous underwriting and lending relationships between issuer

[30] Alternatively, for robustness purposes in unreported regressions we have included a dummy for international marketed bonds - sold in the primary markets of at least two countries. We find that these bonds are more likely to be placed by an underwriter syndicate, supporting the views that as these bonds entail a higher complexity, choosing multiple underwriters is justified.

[31] In unreported regressions, we have used the market capitalization of equity as proxy of firm size instead of total assets, and firm size continues to be statistically insignificant.

and underwriter are found to be significant determinants of multiple underwritten deals. Finally, we find that when there is a great volume of simultaneous debt issuance, multiple underwritten deals are more likely. As in Gunay & Ursel (2015), this result is consistent with their prediction of underwriters limiting their capacity to produce when the market is «hot» as a non-price competition strategy.

Finally, regarding our hypothesis on how the strength of firms' relationships might affect the choice, our findings confirm the predictions. The syndicate choice is influenced by the strength of the relationships held by the issuer. Those issuers that have strong relationships with their lenders are less likely to syndicate a bond issuance. It seems that these firms might be less inclined to syndicate. Nevertheless, during the financial crisis, as predicted, the opposite effect is found. When the crisis emerged, those firms with very concentrated lending relationships, then with a high relational Herfindhal Index, were more likely to syndicate the bond. Therefore, while in the past holding exclusive relationships with few underwriters led firms to opt for sole deals, during the crisis that seems to have changed. This result suggests that firms may decide to syndicate the issuance as a strategy to establish new banking relationships in order to protect themselves from credit restrictions derived from hold-up problems.

After examining how a concentration of firms' relationships affect the decision to syndicate, Table V shows the results of which banks among a set potential underwriters are more likely to underwrite the offering. Column 1 presents the estimation results without considering any previous underwriting or lending relationships. As expected, more reputable underwriters are more likely to be chosen from among the set of potential underwriters by firms issuing bonds. In this sense, this result confirms that, as prior studies show, reputation attracts potential issuers. Firms would like to match their issuance with a highly reputable underwriter, as those issuers acknowledge that underwriter reputation is valuable in capital markets. We obtain a similar result using a dummy variable for the Top 5 and 7 underwriters in the annual league tables. Furthermore, contrary to information spillover theories, as underwriters concentrate their business in a specific industry, the likelihood of being chosen decreases. It seems that industry diversification is a more satisfactory strategy. In addition, consistent with prior empirical findings, the positive coefficient of *shared nationality* reveals that banks that share location with the issuer are more likely to be appointed as underwriters. In Columns 2-4 all the variables reflecting the existence and strength of prior underwriting relationships are included. All the coefficients are positive and significant, which means that during the whole research period underwriting choice was positively influenced by prior underwriting relationships. These results confirm the importance of past relationships within the bond market.

TABLE V
EFFECTS OF LENDING RELATIONSHIPS ON UNDERWRITER CHOICE

This table presents the coefficients, the z-statistics and the marginal effects for the Probit regressions for the determinants of being chosen as underwriter in a given deal. Marginal Effects of column Columns 5 and 6 are computed from estimates of Column 3 and 4. In Column (5) and (6) the values represent the effect on probability when the relationship measures goes from zero to one. Coefficients and standard errors are multiplied by 100. Z-statistics are based on bond clustered standard errors. A constant term (not reported) is included in all regressions. *, **, *** Coefficients are statistically significant different than zero at least at 10 %, 5% and 1% levels.

VARIABLES	Dep. Var: UW Chosen (0 | 1)				Marginal Effects (x100)	
	Coefficients 2003 - 2013					
	(1)	(2)	(3)	(4)	(5)	(6)
Issue size	0.162***	0.157***	0.158***	0.164***		
	(0.0101)	(0.0105)	(0.0115)	(0.0102)		
Maturity	-0.0132	-0.0130	-0.0160	-0.0111		
	(0.0140)	(0.0148)	(0.0173)	(0.0141)		
Callability	0.0325*	0.0198	0.0454**	0.0312*		
	(0.0169)	(0.0178)	(0.0214)	(0.0170)		
Domestic Placement	-0.144***	-0.152***	-0.109***	-0.147***		
	(0.0245)	(0.0267)	(0.0268)	(0.0245)		
Investment Grade	-0.0218	-0.00866	-0.0171	-0.0210		
	(0.0244)	(0.0262)	(0.0290)	(0.0245)		
Issuer size	0.0178**	0.0109	-0.0479***	0.0151**		
	(0.00706)	(0.00779)	(0.00913)	(0.00712)		
Leverage	0.0229	0.0778	0.106*	0.0211		
	(0.0539)	(0.0578)	(0.0623)	(0.0541)		
ROA	-0.00303*	-0.00156	0.00206	-0.00281*		
	(0.00167)	(0.00185)	(0.00204)	(0.00170)		
Finance Vehicle	-0.0213	0.0187	0.0231	-0.0195		
	(0.0180)	(0.0193)	(0.0233)	(0.0182)		
First time issuer	0.0146	0.0638***	0.0739***	0.0191		
	(0.0180)	(0.0202)	(0.0217)	(0.0182)		
UW Reputation	0.138***	0.119***	0.108***	0.136***		
	(0.00329)	(0.00344)	(0.00356)	(0.00331)		
UW Industry specialization	-0.898***	-0.809***	-0.714***	-0.897***		
	(0.0425)	(0.0420)	(0.0427)	(0.0426)		
Shared nationality	0.885***	0.740***	0.709***	0.871***		
	(0.0243)	(0.0251)	(0.0249)	(0.0244)		
UW Mkt. Share		2.186***				
		(0.132)				
Lender Mkt.Share		3.823***				
		(0.269)				
Prior UW			0.517***		3.96***	
			(0.0282)		(0.00215)	
Prior Lender			0.666***		5.09***	
			(0.0237)		(0.174)	
Max Relationship UW				0.453***		3.72***
				(0.0653)		(0.536)
Max Relationship Lender				0.712***		5.85***
				(0.117)		(0.963)
Observations	114,399	114,399	114,399	114,399		
Year	Yes	Yes	Yes	Yes		
Industries	Yes	Yes	Yes	Yes		
Countries	Yes	Yes	Yes	Yes		
Standard Errors	Clustered	Clustered	Clustered	Clustered		
Pseudo R^2	0.2563	0.2912	0.3057	0.2587		
p-value (chi2)	0.00	0.00	0.00	0.00		

All the coefficients measuring the effects of previous lending relationships on the choice are positive and significant. These findings confirm our initial hypothesis: firms are more likely to choose as underwriters the banks that hold lending relationships with them. As for the economic significance of lending relationships in columns 5 and 6, we report the marginal effects, multiplied by 100, of being a prior lender and the relationship bank. We find that being a prior lender (prior underwriter) increases the probability of being chosen by 5.09 percentage points (3.96 percentage points), whilst being the closest lender (underwriter) relationship bank increases the chosen probability by 5.85 percentage points (3.72 percentage points). These findings show that lending relationships have a higher weight on the underwriter matching probability than the underwriting relationships themselves. Therefore, as a number of studies have documented, there are effects from cross-market relationships, with firms' relationships carrying over across lending and debt transactions.

The effects of lending relationships on the underwriter choice during the financial crisis are shown in Table VI. In Columns 1-3 we include interaction terms between the relationships variables and a crisis dummy. These findings suggest that holding lending relationships with a firm during the crisis increases the probability of being chosen as an underwriter to a significantly larger extent than in the pre-crisis period. For robustness purposes, in Column 4 we shorten the time window considered for lending relationships to one year. By doing so, we ensure that our results are not biased by the chance that firms may strategically change their relationships at the onset of the crisis. Results remain robust after considering a shorter time window.

TABLE VI
EFFECTS OF LENDING RELATIONSHIPS ON UNDERWRITER CHOICE DURING THE FINANCIAL CRISIS

This table presents the coefficients, the z-statistics and the marginal effects for the Probit regressions for the determinants of being chosen as underwriter in a given deal. Z-statistics are based on bond clustered standard errors. A constant term (not reported) is included in all regressions. *, **, *** Coefficients are statistically significant different than zero at least at 10 %, 5% and 1% levels.

VARIABLES	Dep. Var: UW Chosen (0 | 1)			
	Crisis Effects (2yrs)		Crisis Effects (1yrs)	
	(1)	(2)	(3)	(4)
Issue size	0.156***	0.158***	0.163***	0.155***
	(0.0106)	(0.0117)	(0.0102)	(0.0106)
Maturity	-0.0142	-0.0147	-0.0109	-0.00893
	(0.0148)	(0.0174)	(0.0141)	(0.0143)
Callability	0.0193	0.0451**	0.0312*	0.0159
	(0.0180)	(0.0215)	(0.0170)	(0.0175)
Domestic Placement	-0.150***	-0.105***	-0.147***	-0.139***
	(0.0272)	(0.0270)	(0.0246)	(0.0264)
Investment Grade	-0.00567	-0.0162	-0.0211	0.00430
	(0.0267)	(0.0292)	(0.0246)	(0.0263)
Issuer size	0.0133*	-0.0476***	0.0153**	0.0114
	(0.00787)	(0.00918)	(0.00712)	(0.00775)
Leverage	0.0829	0.106*	0.0223	0.0878
	(0.0579)	(0.0624)	(0.0541)	(0.0576)
ROA	-0.00198	0.00166	-0.00293*	-0.00206
	(0.00187)	(0.00206)	(0.00168)	(0.00187)
Finance Vehicle	0.0133	0.0194	-0.0208	0.0162
	(0.0194)	(0.0235)	(0.0182)	(0.0191)
First time issuer	0.0668***	0.0739***	0.0190	0.0350*
	(0.0203)	(0.0217)	(0.0182)	(0.0195)
UW Reputation	0.119***	0.108***	0.136***	0.125***
	(0.00344)	(0.00355)	(0.00331)	(0.00340)
UW Industry specialization	-0.805***	-0.714***	-0.896***	-0.840***
	(0.0423)	(0.0428)	(0.0426)	(0.0423)
Shared nationality	0.741***	0.711***	0.872***	0.784***
	(0.0251)	(0.0250)	(0.0244)	(0.0248)
UW Mkt. Share	2.154***			1.512***
	(0.132)			(0.137)
Prior UW		0.514***		
		(0.0283)		
Max Relationship UW			0.454***	
			(0.0653)	
Lender Mkt.Share	2.452***			3.255***
	(0.335)			(0.419)
Lender Mkt.Share*Crisis	2.256***			1.933***
	(0.492)			(0.616)
Prior Lender		0.594***		
		(0.0406)		
Prior Lender*Crisis		0.0943**		
		(0.0463)		
Max Relationship Lender			0.319**	
			(0.187)	
Max Relationship Lender*Crisis			0.676***	
Observations	114,399	114,399	114,399	114,399
Year	Crisis Dummy	Crisis Dummy	Crisis Dummy	Crisis Dummy
Industries	Yes	Yes	Yes	Yes
Countries	Yes	Yes	Yes	Yes
Standard Errors	Clustered	Clustered	Clustered	Clustered
Pseudo R^2	0.2929	0.3059	0.2589	0.2829
p-value (chi2)	0.00	0.00	0.00	0.00

As for the economic significance of these results, Table VII shows the average adjusted probabilities. We find that the bank holding the closest lending relationship with the bond issuer – that is, the main loan provider – increases the probability of being chosen by 11 points (124%) during the crisis compared to the pre-crisis period. Further, if a non-lender bank before the crisis becomes the closest lender for a firm during the crisis, the probability of being chosen is even larger, at 14 points higher (246%). As can be seen in Table VII, although holding a lending relationship with a firm during the crisis is positive in terms of underwriter choice, the effects on the probability are larger if the bank is the closest lender bank. In conclusion, the overall results of Tables V and VI confirm the industry claims and support our hypothesis about the positive reinforcement effects of lending relationships on underwriter choice during the financial crisis. These findings suggest that financial instability combined with the existence of credit constraints in the financial markets are likely to affect firms' choice in what regards their strategy to access a source of funding in capital markets. Although former relationships are consistently important for firms throughout economic cycles, they seem to be more decisive in periods of turmoil, when markets dry up. Hence, as lender banks are added to the syndicate, these results allow us to argue that the recent multiple underwriting syndication in Europe is best explained by the strengthening role of lending relationships on underwriter choice. In consequence, the increased likelihood for lending banks to gain market share in the underwriting business led them to incorporate in syndicates even though the traditional bulge-bracket investment banks maintained their influence. This argument is thus consistent with the reduction in underwriting concentration in European capital markets and the gaining of market shares of mid-tier commercial banks.

TABLE VII
PREDICTED AVERAGE PROBABILITIES OF EFFECTS OF LENDING RELATIONSHIPS
This table presents the average adjusted probabilities on the underwriter choice based on regression on Table X.

	With prior relationships		Without prior relationships	
	Prior Lender (1 → 1)	**Max Relationship Lender (1 → 1)**	**Prior Lender (0→1)**	**Max Relationship Lender (0→1)**
Precrisis	Prob (UW chosen =1) = 0.103308	Prob (UW chosen =1) = 0.088409	Prob (UW chosen =1) = 0.0433335	Prob (UW chosen =1) = 0.0572726
Crisis	Prob (UW chosen =1) = 0.1083799	Prob (UW chosen =1) = 0.1986973	Prob (UW chosen =1) = 0.1083799	Prob (UW chosen =1) = 0.1986973
ΔProb (UW chosen=1)	0.0050719	0.1102881	0.0650449	0.1414247
Δ%	4.91%	124.72%	150.09%	246.93%

Finally, we have rerun our models including some robustness controls. For the sake of brevity we report only the coefficients of the key explanatory variables, although the model is estimated considering all the variables of Tables V and VI. In Column 1 – 3 of Table VIII we present the model excluding from the set of eligible underwriters those that issued lower than 1% of the total deals in the year of issue. Results remain robust. Moreover, we also explore the effect of relationships during the financial crisis, distinguishing whether the firm is a recent borrower (firms that took out a loan the year before the bond issuance) or not. In Columns 4 and 5, we find that even though the effects of lending relationships are present for both kinds of firms, these effects are larger for recent borrowers. Thus, these results confirm the importance of lending relationships during the crisis and show that those receiving recent supporting credit are even more important.

TABLE VIII
EFFECTS OF LENDING RELATIONSHIPS ON THE UNDERWRITER CHOICE DURING THE FINANCIAL CRISIS

This table presents the coefficients and the z-statistics for the Zero-Truncated Poisson and Ordered Probit regressions on the number of bond underwriters. Z-statistics are based on issuer clustered standard errors. A constant term (not reported) is included in all regressions. *, **, *** Coefficients are statistically significant different than zero at least at 10 %, 5% and 1% levels.

VARIABLES	Excluding <1% mkt.share deals			Crisis =1	
				Recent Borrowers =0	Recent Borrowers =1
	(1)	(2)	(3)	(4)	(5)
UW Mkt.Share	2.098*** (0.132)			1.994*** (0.210)	2.153*** (0.298)
Prior UW		0.492*** (0.0283)			
Max Relationship UW			0.438*** (0.0646)		
Lender Mkt.Share	2.540*** (0.337)			3.743*** (0.522)	5.289*** (0.582)
Lender Mkt.Share*Crisis	2.303*** (0.506)				
Prior Lender		0.625*** (0.0408)			
Prior Lender*Crisis		0.0564** (0.0465)			
Max Relationship Lender			0.347** (0.184)		
Max Relationship Lender*Crisis			0.655*** (0.236)		
Observations	70,748	70,748	70,748	59,302	28,808
Year	Crisis Dummy	Crisis Dummy	Crisis Dummy	-	-
Industries	Yes	Yes	Yes	Yes	Yes
Countries	Yes	Yes	Yes	Yes	Yes
Standard Errors	Clustered	Clustered	Clustered	Clustered	Clustered
Pseudo R^2	0.2288	0.2413	0.1904	0.2749	0.3710
p-value (chi2)	0.00	0.00	0.00	0.00	0.00

5.2. The Syndicate formation: Determinants of the syndicate size

As Figures A.I and A.II show, simultaneously with the underwriting syndication trend, firms have moved from a more exclusive banking relationship to multiple banking relationships. Therefore, differences are also likely to appear in the syndicate size. Consequently, then, we investigate the determinants of the number of underwriters in the syndicate. Table V reports the coefficients and z-statistics based on issuer clustered standard errors for the number of underwriters. In columns 1 and 2 we have included the same regressors as in Table IV. Supporting the need of higher distribution capabilities, syndicate size increases with bond size while decreasing for domestically placed bonds. Consistent with prior literature that argues that issuer-underwriter relationships are capable of explaining the matching, we find that in large syndicates it is more likely to observe banks that have been previously appointed as co-manager, underwriter or lender by the issuer. Additionally, in the zero-truncated Poisson estimations all the coefficients of the variables used as proxy for possible issuer-underwriter relationships are positive and statistically significant.

Conversely, in both alternative specifications, reputation decreases with syndicate size, large syndicates are on average less reputable than small syndicates. This result contrasts with the statistically insignificant coefficient of reputation in the probit estimations of Table IV. Taken together, both results suggest that differences in reputation appear as syndicate size increases. Furthermore, bond rating and issuer rating become statistically significant, indicating that large syndicates placed debt from lower quality issuers with lower ratings. These results provide additional insights into the syndicate formation. These results are confirmed in the second-stage estimations shown in Table XI. While prior results show that there are no differences in terms of reputation and quality between sole underwritten deals and syndicated deals, these latter findings suggest that differences appear between small and large syndicates.

TABLE IX
DETERMINANTS OF THE NUMBER OF UNDERWRITERS

This table presents the coefficients and the z-statistics for the Zero-Truncated Poisson and Ordered Probit regressions on the number of bond underwriters. Z-statistics are based on issuer clustered standard errors. A constant term (not reported) is included in all regressions. *, **, *** Coefficients are statistically significant different than zero at least at 10 %, 5% and 1% levels.

VARIABLES	Dep. Var: Number of Underwriters		Dep. Var: Size (1 - 4)	
	ZTP Bond Rating	ZTP Issuer Rating	OProbit I Bond Rating	OProbitII Issuer Rating
Issue Size	0.412***	0.408***	0.903***	0.938***
	(0.0358)	(0.0412)	(0.0608)	(0.0673)
Maturity	0.00941	0.0493	0.0859	0.155*
	(0.0362)	(0.0370)	(0.0855)	(0.0900)
Callablility	0.0274	0.0427	-0.0262	0.0420
	(0.0433)	(0.0446)	(0.114)	(0.121)
Bond Rating	-0.0330***		-0.0720***	
	(0.0112)		(0.0269)	
Issuer Rating		-0.0335**		-0.0672*
		(0.0135)		(0.0358)
Domestic Placement	-0.596***	-0.535***	-1.178***	-1.391***
	(0.142)	(0.143)	(0.292)	(0.260)
Issuer size	-0.00221	-0.0127	0.0151	0.00848
	(0.0270)	(0.0316)	(0.0579)	(0.0764)
Leverage	-0.000821	-0.00127	-0.00170	-0.00223
	(0.000663)	(0.000888)	(0.00143)	(0.00207)
ROA	-0.000115	-0.00290	0.0134	0.00501
	(0.00473)	(0.00570)	(0.0123)	(0.0154)
Finance Vehicle	-0.0601	-0.0233	-0.169	-0.136
	(0.0514)	(0.0585)	(0.114)	(0.133)
First time issuer	0.0386	-0.00913	0.161	-0.0288
	(0.0525)	(0.0684)	(0.134)	(0.172)
Nº Co-Managers	-0.00941	-0.00879	-0.0241	-0.0256
	(0.00945)	(0.0101)	(0.0196)	(0.0204)
UW Syndicate Reputation	-0.0313***	-0.0313***	-0.0497**	-0.0571**
	(0.0104)	(0.0103)	(0.0238)	(0.0250)
Market Simultaneity	0.0301	0.0316	0.0458	0.0521
	(0.0218)	(0.0231)	(0.0524)	(0.0593)
UW previous co-manager	0.0953***	0.103***	0.172*	0.170*
	(0.0369)	(0.0377)	(0.0929)	(0.0992)
UW previous UW	0.0908**	0.0823*	0.289***	0.295**
	(0.0405)	(0.0431)	(0.102)	(0.115)
UW previous lender	0.0867**	0.0577	0.281***	0.308***
	(0.0375)	(0.0406)	(0.0905)	(0.0986)
Constant cut1			2.323***	2.542***
			(0.717)	(0.852)
Constant cut2			4.614***	4.899***
			(0.726)	(0.861)
Constant cut3			6.124***	6.470***
			(0.746)	(0.884)
Observations	1,629	1,412	1,629	1,412
Pseudo R^2 / R-squared	0.1493	0.1426	0.2804	0.2924
Year	Yes	Yes	Yes	Yes
Industries	Yes	Yes	Yes	Yes
Countries	Yes	Yes	Yes	Yes
Standard Errors	Clustered	Clustered	Clustered	Clustered

Acknowledging that categorizing a variable could be statistically problematic, for robustness purposes we classify bonds into 4 groups according to the number of underwriters in order to highlight these differences. This division, based on quantile values, considers: sole underwritten deals, small syndicates (2 - 3 underwriters), medium syndicate (4 - 5 underwriters) and large syndicates (more than 5 underwriters). All the ancillary or threshold parameters are significantly different from each other, confirming that the categories cannot be combined into one. In the last columns of Table IX it is shown that large syndicate deals are formed by less reputable underwriters with lower bond and issuer ratings.[32] Finally, as shown in Table X, these findings are confirmed by checking for statistical differences between groups in means (t-statistics).

TABLE X
UNIVARIATE STATISTICS BY SYNDICATE SIZE

PANEL A.
This table reports the descriptive statistics by syndicate size. Small syndicates are those with 2 - 3 underwriters. Medium syndicates are those with 4 -5 underwriters and large syndicates are those with more than 5 underwriters. UW Syndicate Reputation is the average market share of the syndicate underwriters. Bond Rating and Issuer Rating are numerical ratings given by S&P to the bond and the issuer at the launch (AAA = 22 , Aaa = 21 , . . . , CCC+ or below =1).

		Small Syndicate	Medium Syndicate	Large Syndicate	Small vs Medium	Medium vs Large	Small vs Large
UW reputation	Mean	5.0284	5.1889	4.4677	-1.45	6.90***	4.68**
	Median	5.0366	5.0193	4.4302			
Bond Rating	Mean	15.95	15.27	13.71	3.87**	6.52***	9.23***
	Median	16	16	14			
Issuer Rating	Mean	15.96	15.33	13.77	3.75**	6.54***	9.12***
	Median	16	16	14			

[32] For robustness purposes, in unreported regressions we have explored the syndicate size excluding large syndicates (> 5 underwriters). Our results are confirmed since we find that when large syndicates are excluded syndicate reputation, bond and issuer rating are not statistically significant.

PANEL B. Syndicate Features

UW Syndicate Reputation is the average market share of the syndicate underwriters. Std. Dev. Syndicate Reputation is the average standard deviation market share of the syndicate underwriters. Syndicate Ratio UW rep/Less rep is a ratio computed dividing the market share of the most reputable UW of the syndicate by the market share of the less reputable UW of the syndicate. Syndicate Ratio UW rep/Synd rep is a ratio computed dividing the market share of the most reputable UW by the average market share of the syndicate underwriters.

	Small Syndicate			Medium Syndicate			Large Syndicate			Small vs Med	Medium vs Large	Small Vs Large
	mean	p1	p90	mean	p1	p90	mean	p1	p90			
Syndicate Reputation	5.01	0.08	8.27	5.19	1.83	7.57	4.47	1.60	5.70			
Std. Dev. Syndicate Reputation	2.44	0.00	4.85	2.65	0.59	4.06	2.25	0.92	3.22	-2.79**	6.01***	2.47*
Syndicate Ratio UW rep/Less rep	7.53	1.00	13.22	10.47	1.21	14.73	36.06	1.45	41.96			
Syndicate Ratio UW rep/Synd rep	1.47	1.00	1.90	1.66	1.10	2.16	1.77	1.16	2.19			
			n=901			n=568				n=194		

PANEL C. Sub - Sample Best Reputable UWs (Top 7)

	Small Syndicate			Medium Syndicate			Large Syndicate			Small vs Med	Medium vs Large	Small Vs Large
	mean	p1	p90	mean	p1	p90	mean	p1	p90			
Syndicate Reputation	6.61	2.87	9.12	5.73	2.72	8.05	4.81	2.37	6.18			
Std. Dev. Syndicate Reputation	2.70	0.10	4.94	2.62	0.53	3.98	2.29	0.92	3.22			
Syndicate Ratio UW rep/Less rep	5.31	1.01	10.53	8.34	1.21	12.46	25.17	1.45	35.04			
Syndicate Ratio UW rep/Synd rep	1.39	1.00	1.83	1.56	1.09	1.97	1.68	1.16	2.14			

Shivdasani & Song (2011) argue that, consistent with the certification hypothesis, reputation is less important in syndicated deals. In contrast, we find that syndicated bonds cannot be associated with a lower underwriter reputation and poor credit ratings. Our findings suggest that multiple underwritten deals are associated with lower underwriter reputation and low ratings only when the syndicate is large. We argue that as firms have moved from single to multiple relationships, appointing more than one underwriter has become more usual. However, the relaxation in the certifying function might not appear by the fact of employing a syndicate but for employing a syndicate with a large number of underwriters, in which passive underwriters are likely to appear. Free-riding problems are not likely to appear in small and medium syndicates where all members are likely to control each other's efforts. However, this problem is more likely to arise in large syndicates in which the presence of passive underwriters is recognized. Therefore, complementing Shivdasani & Song (2011), it could be argued that reputation, proxied by underwriters' market share, is less important in large syndicated deals.

This possible explanation coincides in this regard with the industry claims about appointing banks as passive underwriters in order to reward them for past events. Consequently, their lack of experience in the underwriting industry coupled with the existence of free-riding problems as the syndicate size increases are likely to explain a lower reputation. The decrease in reputation as syndicate size increases might be explained if, as the industry claims, these extra underwriters come from the lending industry. They are less reputable in the underwriting industry because they come from the lending industry, mainly commercial banks. Therefore, if nowadays, as some investment bank chiefs have reported, it is more likely to appoint as underwriter a bank with lending relationships, which could explain why large syndicate deals are less reputable.

5.3. What determines joining an underwriting syndicate?

Panels B and C of Table X offer some descriptive statistics of syndicated deals. Overall, these results confirm that while syndicate reputation is not statistically different in small and medium syndicates, large syndicates are statistically less reputable. Furthermore, it is worth mentioning that underwriters in large syndicates are more homogeneous, in terms of their reputation, than those in small syndicates. In this sense, the standard deviation of the syndicate reputation, measured using underwriters' market shares, is lower for large syndicates, as can be seen in Figure A.III. Standard deviation increases as the syndicate size does, reaching a maximum of 4 underwriters per bond before beginning to decrease. These findings are confirmed in Panel C in Table X for the sub-sample of syndicates in which there is a top 7 reputable underwriter. Although large syndicates are formed by several underwriters, they are not heterogeneously reputable. Taking together low underwriters' heterogeneity and low average reputation in large syndicates, these results suggest that reputable underwriters are less likely to be found in large syndicates. Similarly, it seems that less reputable underwriters are those who decide to join a large syndicate. In this sense, assuming that, as the industry argues, in large syndicates some banks do not execute any effort, which consequently risks a deal's success and puts underwriters' reputations at stake, these findings would confirm that more reputable banks are less likely to accept becoming part of a large syndicate.

Table XI shows the estimation results for the probit models on the syndicate decision. As in Table IX, supporting the size hypothesis, we find that bonds with large

proceeds and domestic bonds are more likely to be placed by a syndicate of underwriters. Moreover, as expected, *UW relative bond weight* has a negative coefficient which means that as a bond increases its relevance for the underwriter, it is less likely to accept a joint-deal. Further, the regressions show that *relative pipeline* is positive, meaning that the busier an underwriter is, considering its reputation and market conditions, the more likely it is to accept a syndicated deal. It is worth mentioning the negative significant coefficient of *UW Reputational distance* and *DistanceMS*. The interaction terms reveal that the likelihood even decreases when the underwriter is one of the most reputable. Taken together, these results suggest that more reputable banks are less likely to be members of a syndicated bond. Hence, after controlling for bond and issuer characteristics, we interpret these findings as consistent with the certification role of reputation in capital markets. Reputable underwriters are members of multiple syndicated deals because the underwriting industry has moved from sole underwritten deals to the underwriting syndication. Nevertheless, they are not likely to join a syndicate if they perceive that they are matching with largely less reputable underwriters. We argue that their reputational concern is what might lead them to refrain from joining these deals.

TABLE XI
DETERMINANTS OF THE NUMBER OF UNDERWRITERS: Second-stage results

This table presents the coefficients and the z-statistics for the Second-stage baseline OLS results for the number of bond underwriters. The dependent variable is the number of banks in the syndicate for multiple underwritten deals. In the first-stage we use a probit model in which the dependent variable takes the value 1 if the bond is a syndicated deal. The inverse Mills-ratio is obtained from first-stage probit estimations to control for self-selection bias. Z-statistics are based on issuer clustered standard errors. A constant term (not reported) is included in all regressions. *, **, *** Coefficients are statistically significant different than zero at least at 10 %, 5% and 1% levels.

VARIABLES	Dep. Var: Nº of UWs for multiple UW deals	
	OLS Bond Rating	OLS Bond Rating
Issue Size	1.072*** (0.138)	0.941*** (0.141)
Maturity	0.00572 (0.112)	0.116 (0.109)
Callablility	0.0512 (0.147)	0.0615 (0.151)
Bond Rating	-0.0916** (0.0376)	
Issuer Rating		-0.123** (0.0489)
Domestic Placement	-1.219*** (0.254)	-1.185*** (0.275)
Issuer size	0.0336 (0.0828)	0.0394 (0.105)
Leverage	-0.00298 (0.00218)	-0.00504 (0.00309)
ROA	-0.0166 (0.0158)	-0.0232 (0.0180)
Finance Vehicle	-0.126 (0.165)	-0.00145 (0.176)
First time issuer	0.166 (0.177)	-0.103 (0.187)
UW Syndicate Reputation	-0.110*** (0.0307)	-0.101*** (0.0292)
UW previous co-manager	0.263* (0.146)	0.295** (0.143)
UW previous UW	0.358** (0.145)	0.245* (0.134)
UW previous lender	0.301** (0.139)	0.138 (0.147)
Inverse Mills Ratio	1.065*** (0.339)	0.546* (0.314)
Observations	1,453	1,262
R-squared	0.366	0.357
Year	Yes	Yes
Industries	Yes	Yes
Countries	Yes	Yes
Standard Errors	Clustered	Clustered

5.4. Does syndication come at a cost?

Table XIII presents the regressions results of the bond spread before and during the crisis. This table shows the second stage regression results in which, in the first step, the selection is modeled with the probit models of section 4.1. As we expected, during the financial crisis investors are more likely to demand a higher spread for callable and low-rated bonds that are issued by leveraged, lower-profit and first-time issuers. The statistically insignificant coefficient of the Inverse-Mills ratio that accounts for a non-random syndicate choice allows us to claim that in the pre-crisis period issuers' self-selection was not a concern. This result suggests that the issuer's syndication decision was not endogenous with its bond cost. Therefore, bond pricing did not differ between sole and syndicated deals in the pre-crisis period. Nevertheless, in Columns 3 and 4 we obtain different outcomes from the estimations during the financial crisis period. The inverse Mills-ratio has a negative and significant effect on the spread, which could be interpreted as there being features that simultaneously favor the syndication choice and have a negative effect on bond spread. However, the coefficient of syndicated deals is not significant. These results combined suggest that, during the crisis, issuers self-select into a sole or syndicated deal and that self-selection leads to lower spreads. This is consistent with the possibility that, during the crisis, cost minimization is one of the decision variables that determines a syndicate self-selection process.

TABLE XII
DETERMINANTS OF THE MULTIPLE UNDERWRITTEN DEALS

This table presents the coefficients and the z-statistics for the Probit regressions for the determinants of multiple underwritten deals. Issue size is the natural logarithm of the bond proceeds. Z-statistics are based on bond clustered standard errors. A constant term (not reported) is included in all regressions. *, **, *** Coefficients are statistically significant different than zero at least at 10 %, 5% and 1% levels.

VARIABLES	Dep. Var: Nº of UWs for multiple UW deals	
	OLS Bond Rating	OLS Bond Rating
Issue Size	1.072*** (0.138)	0.941*** (0.141)
Maturity	0.00572 (0.112)	0.116 (0.109)
Callablility	0.0512 (0.147)	0.0615 (0.151)
Bond Rating	-0.0916** (0.0376)	
Issuer Rating		-0.123** (0.0489)
Domestic Placement	-1.219*** (0.254)	-1.185*** (0.275)
Issuer size	0.0336 (0.0828)	0.0394 (0.105)
Leverage	-0.00298 (0.00218)	-0.00504 (0.00309)
ROA	-0.0166 (0.0158)	-0.0232 (0.0180)
Finance Vehicle	-0.126 (0.165)	-0.00145 (0.176)
First time issuer	0.166 (0.177)	-0.103 (0.187)
UW Syndicate Reputation	-0.110*** (0.0307)	-0.101*** (0.0292)
UW previous co-manager	0.263* (0.146)	0.295** (0.143)
UW previous UW	0.358** (0.145)	0.245* (0.134)
UW previous lender	0.301** (0.139)	0.138 (0.147)
Inverse Mills Ratio	1.065*** (0.339)	0.546* (0.314)
Observations	1,453	1,262
R-squared	0.366	0.357
Year	Yes	Yes
Industries	Yes	Yes
Countries	Yes	Yes
Standard Errors	Clustered	Clustered

TABLE XIII
BOND PRICING

This table presents the coefficients of the Heckman selectivity model regression for the Second-stage OLS estimations for non-financial corporate bonds issued in Europe from 2003 - 2013. The dependent variable is the bond spread in bps. In the first-stage we use a probit model in which the dependent variable takes the value 1 if the bond is a syndicated deal as in Table IV. The inverse Mills-ratio is obtained from first-stage probit estimations to control for syndication choice endogeneity bias. Z-statistics are based on issuer clustered standard errors. A constant term (not reported) is included in all regressions. *, **, *** Coefficients are statistically significant different than zero at least at 10 %, 5% and 1% levels.

VARIABLES	Dep. Var: Spread Benchmark (bps)			
	(1)	(2)	(3)	(4)
	Precrisis		Crisis	
Issue size	-2.075	-2.443	-12.61*	-12.83*
	(11.46)	(11.25)	(6.813)	(6.791)
Maturity	24.93***	25.11***	3.962	4.050
	(6.537)	(6.517)	(11.75)	(11.75)
Callability	68.94***	69.58***	29.02**	28.75**
	(14.70)	(14.98)	(11.37)	(11.31)
Purpose: Debt Repayment	10.99	9.115	-3.862	-4.145
	(21.86)	(22.16)	(11.59)	(11.63)
Bond Rating	-30.98***	-30.95***	-46.45***	-46.47***
	(3.672)	(3.739)	(4.405)	(4.419)
First-time issuer	1.159	1.681	28.09*	28.30*
	(17.61)	(17.74)	(15.90)	(16.00)
Issuer Size	7.686	7.649	-1.885	-1.813
	(6.917)	(7.015)	(7.293)	(7.317)
Leverage	-0.0301	-0.0261	0.329*	0.334*
	(0.166)	(0.165)	(0.198)	(0.195)
ROA	-1.314	-1.274	-3.352**	-3.309**
	(1.529)	(1.536)	(1.408)	(1.406)
UW reputation (TOP 7)	2.458	2.924	14.60	14.57
	(8.891)	(8.963)	(10.80)	(10.82)
Syndicated Bond (0|1)		-11.77		-33.12
		(35.82)		(42.51)
Inverse Mills Ratio	25.09	18.26	-73.29***	-84.04***
	(27.42)	(31.33)	(26.49)	(24.62)
Observations	351	351	844	844
R-squared	0.748	0.749	0.706	0.706
Year	Yes	Yes	Yes	Yes
Industries	Yes	Yes	Yes	Yes
Countries	Yes	Yes	Yes	Yes
Standard Errors	Clustered	Clustered	Clustered	Clustered

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6. CONCLUSIONS

The size of underwriting syndicates has risen sharply since 2000 but particularly during the financial crisis. The latest market developments reveal that multiple underwritten bonds are more frequent, as are syndicates formed by a large number of banks. The industry has reported that syndication is the result of issuers' demand because firms favor their relationship banks as underwriters in difficult times. This issue is particularly relevant for industry and investors. From the point of view of the industry the nature of the underwriting industry is changing, firms hold less exclusive relationships and the market concentration is being reduced. Furthermore, investors are interested in the phenomenon because the large syndication phenomenon might affect the pricing and post-bond performance.

In this paper we have analyzed the syndicate formation, examining the effects of prior relationships on syndicate decisions and underwriter choice using a large sample of corporate bonds issued in Europe. To the best of our knowledge, we are the first to offer an explanation of the debt-underwriting syndication phenomenon. We find that during the financial crisis firms with exclusive relationships are more likely to employ a syndicate. Furthermore, we find that prior lending relationships had a more intense effect during the crisis, the bank having the closest lending relationship with the bond issuer increased the probability of being chosen by 11 points (124%) during the crisis compared to the pre-crisis period. Regarding the syndicate formation, we find that reputable banks refrain from joining a syndicate if they perceive that they are matching with less reputable counterparts. Finally, we find that these factors simultaneously favor the syndication choice and have a negative effect on bond spread. These results are found to be robust over alternative models and identification.

Overall, these results confirm that the syndication formation has been to a large extent explained by a positive reinforcement of prior relationships, particularly lending relationships, on underwriter matching. Furthermore, during the crisis firms that held very concentrated relationships opted for a syndicate. Our evidence suggests that the existence of larger syndicates could be motivated by the larger effects of relationships during the crisis. Additionally, our results provide evidence for the certification hypothesis, as reputable underwriters refrain from participating in large syndicates with less reputable counterparts, which is interpreted as a reputational concern.

Appendix

FIGURE A.I
EVOLUTION OF ISSUER-UW RELATIONSHIPS

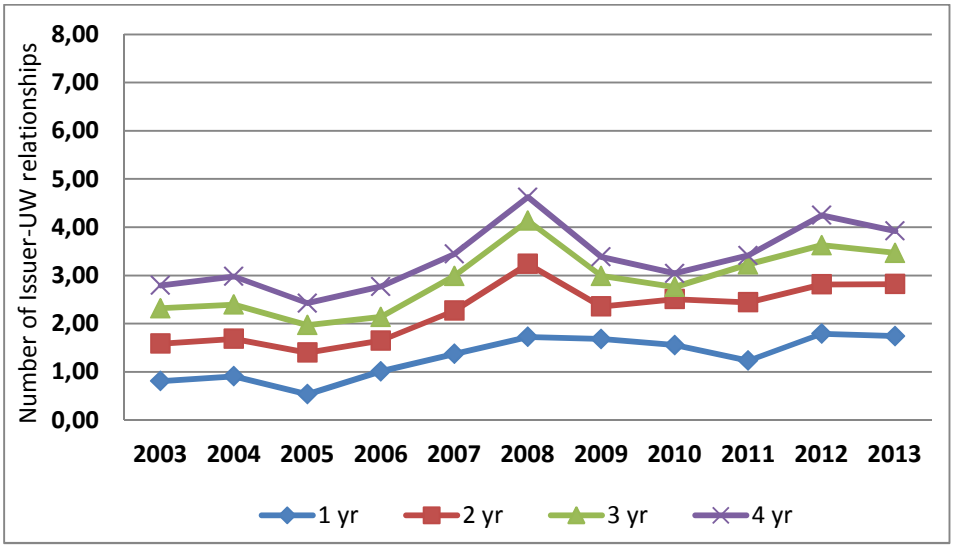


FIGURE A.II
EVOLUTION STRENGTH OF ISSUER-UW RELATIONSHIPS

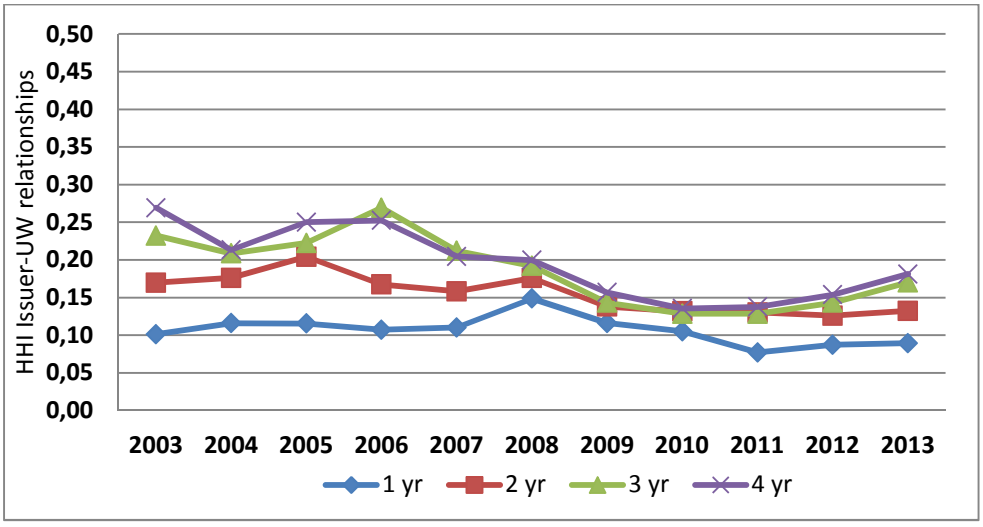


FIGURE A.III
SYNDICATE STANDARD DEVIATION

This figure uses cross medians syndicate standard deviation and then uses them as knots to fit a cubic spline. Standard deviation is computed using UWs' market shares.

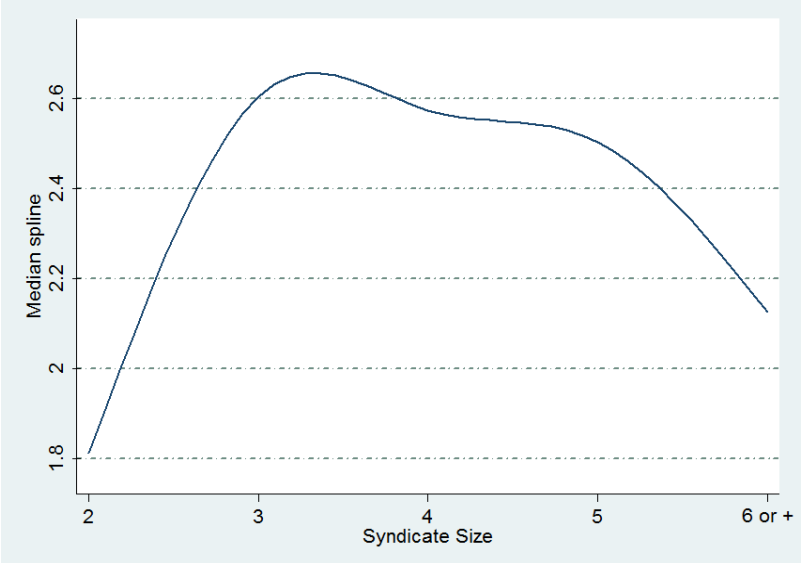
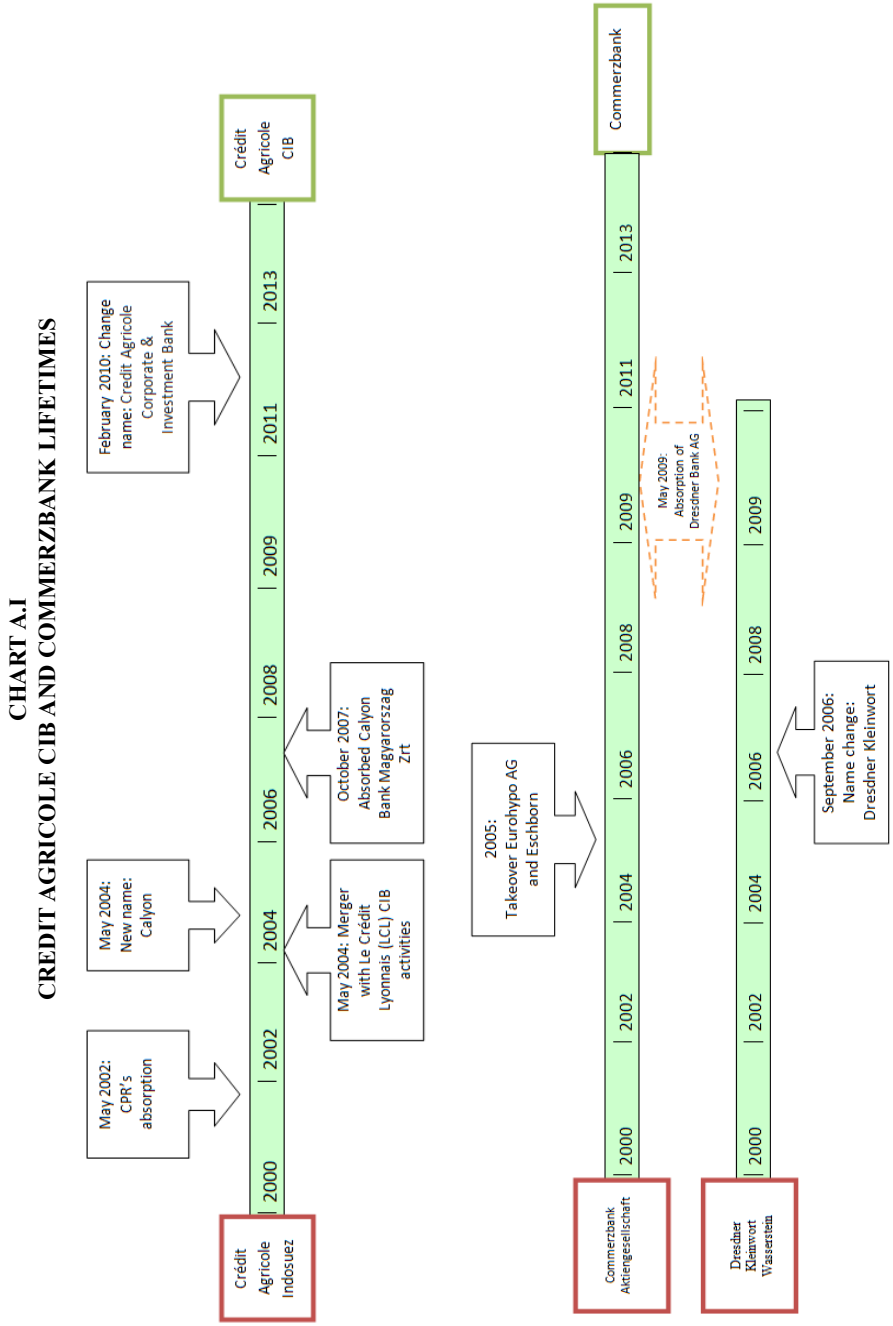


CHART A.I
CREDIT AGRICOLE CIB AND COMMERZBANK LIFETIMES



References

Alexandre, H., Bouaiss, K., & Refait-Alexandre, C. (2014). Banking Relationships and Syndicated Loans during the 2008 Financial Crisis. *Journal of Financial Services Research*, *46*(1), 99-113.

Amemiya, T. (1974). Bivariate Probit Analysis : Minimum Chi-Square Methods. *Journal of the American Statistical Association*, *69*(348), 940-944.

Andres, C., Betzer, A., & Limbach, P. (2014). Underwriter reputation and the quality of certification: Evidence from high-yield bonds. *Journal of Banking & Finance*, *40*, 97-115.

Ang, J. S., & Zhang, S. (2004). League table: a study of the competition to underwrite floating rate debt. *Journal of International Financial Markets, Institutions and Money*, *14*(4), 329-349.

Asker, J., & Ljungqvist, A. (2010). Competition and the Structure of Vertical Relationships in Capital Markets. *Journal of Political Economy*, *118*(3), 599-647.

Baum, J. A. C., Rowley, T. J., Shipilov, A. V., & Chuang, Y. T. (2005). Dancing with strangers: Aspiration Performance and the Search for Underwriting Syndicate Partners. *Administrative Science Quarterly*, *50*, 536-575.

Beatty, P., & Ritter, J. R. (1986). Investment and the Initial Public Offerings. *Journal of Financial Economics*, *15* (June 1984), 213-232.

Benveniste, L. M., Ljungqvist, A., Wilhelm, W. J., & Yu, X. (2003). Evidence of Information Spillovers in the Production of Investment Banking Services. *The Journal of Finance*, *LVIII*(2), 577-608.

Bharath, S., Dahiya, S., Saunders, A., & Srinivasan, A. (2007). So what do I get? The bank's view of lending relationships. *Journal of Financial Economics*, *85*(2), 368-419.

Boot, A. W. a. (2000). Relationship Banking: What Do We Know? *Journal of Financial Intermediation*, *9*, 7-25.

Booth, J. R., & Chua, L. (1996). Ownership dispersion, costly information, and IPO underpricing. *Journal of Financial Economics*, *41*(2), 291-310.

Booth, J. R., & Smith, R. L. (1986). Capital raising, underwriting and the certification hypothesis. *Journal of Financial Economics*, *15*, 261-281.

Burch, T. R., Nanda, V., & Warther, V. (2005). Does it pay to be loyal? An empirical analysis of underwriting relationships and fees. *Journal of Financial Economics*, *77*(3), 673-699.

Carter, R., & Manaster, S. (1990). Initial Public Offerings and Underwriter Reputation. *The Journal of Finance*, *45*(4), 1045-1067.

Chaplinsky, S., & Erwin, G. R. (2009). Great expectations: Banks as equity underwriters. *Journal of Banking & Finance*, *33*(2), 380-389.

Chemmanur, T. J., & Fulghieri, P. (1994). Investment Bank Reputation , Information Production , and Financial Intermediation. *The Journal of Finance*, *49*(1), 57-79.

Chemmanur, T. J., & Krishnan, K. (2012). Heterogeneous Beliefs, IPO Valuation, and the Economic Role of the Underwriter in IPOs. *Financial Management*, *41*(4), 769-811.

Chen, H. C., Ho, K. Y., & Weng, P. S. (2013). IPO underwriting and subsequent lending. *Journal of Banking and Finance*, *37*(12), 5208-5219.

Chen, H., & Ritter, J. R. (2000). The Seven Percent Solution. *The Journal of Finance*, *LV*(3), 1105-1131.

Chuluun, T. (2015). The role of underwriter peer networks in IPOs. *Journal of Banking & Finance*, *51*, 62-78.

Chung, S., Singh, H., & Lee, K. (2000). Complementarity, Status Similarity and Social Capital as Drivers of Alliance Formation. *Strategic Management Journal*, *21*(1), 1-22.

Corwin, S. A., & Schultz, P. (2005). The role of IPO underwriting syndicates: Pricing, information production, and underwriter competition. *The Journal of Finance*, *60*(February 2005), 443-486.

Corwin, S. A., & Stegemoller, M. (2014). *The Changing Nature of Investment Banking Relationships*.

Corwin, S., & Schultz, P. (2005). The Role of IPO Underwriting Syndicates : Pricing , Information Production , and Underwriter Competition. *Journal of Finance*, *60*(February), 443-486.

Davidson, W. N., Xie, B., & Xu, W. (2006). IPO Placement Risk and the Number of Co-Managers. *The Financial Review*, *41*, 405-419.

Detragiache, E., Garella, P., & Guiso, L. (2000). Multiple versus Single Banking Relationships : Theory and Evidence. *The Journal of Finance*, *55*(3), 1133-1161.

Dewally, M., & Shao, Y. (2014). Liquidity crisis, relationship lending and corporate finance. *Journal of Banking and Finance*, *39*(1), 223-239.

Drucker, S., & Puri, M. (2005). On the Benefits of Concurrent Lending. *The Journal of Finance*, *LX*(6), 2763-2799.

Duarte-Silva, T. (2010). The market for certification by external parties: Evidence from underwriting and banking relationships. *Journal of Financial Economics*, *98*(3), 568-582.

Dunbar, C. G. (2000). Factors affecting investment bank initial public offering market share. *Journal of Financial Economics*, *55*(2000), 3-41.

Esho, N., Kollo, M. G., & Sharpe, I. G. (2006). Eurobond underwriter spreads. *Accounting and Finance*, *46*(1), 71-95.

Fang, L. H. (2005). Investment Bank Reputation and the Price and Quality of Underwriting Services. *The Journal of Finance*, *60*(6), 2729-2761.

Farinha, L., & Santos, J. a. C. (2002). Switching from Single to Multiple Bank Lending Relationships: Determinants and Implications. *Journal of Financial Intermediation*, *11*(2), 124-151.

Fernando, C. S., Gatchev, V. A., & May, A. D. (2012). The Benefits of Underwriter Reputation to Banks and Equity Issuing Firms. *Working Paper*.

Fernando, C. S., Gatchev, V. A., & Spindt, P. A. (2005). Wanna Dance ? How Firms and Underwriters Choose Each Other. *The Journal of Finance*, *LX*(5), 2437-2469.

Francois, P., & Missonier-Piera, F. (2007). The Agency Structure of Loan Syndicates. *The Financial Review*, *42*, 227-245.

Gande, A., Puri, M., & Saunders, A. (1999). Bank entry, competition, and the market for corporate securities underwriting. *Journal of Financial Economics*, *54*, 165-195.

Gande, A., Puri, M., Saunders, A., & Walter, I. (1997). Banks underwriting debt securities: Modern evidence. *The Review of Financial Studies*, *10*(4), 1175-1202.

Gatti, S., Kleimeier, S., Megginson, W., & Steffanoni, A. (2013). Arranger Certification in Project Finance. *Financial Management*, *42*(1), 1-40.

Godlewski, C. J. (2010). Banking environment and loan syndicate structure: a cross-country analysis. *Applied Financial Economics*, *20*(8), 637-648.

Golubov, A., Petmezas, D., & Travlos, N. G. (2012). When It Pays to Pay Your Investment Banker : New Evidence on the Role of Financial Advisors in M & As. *Journal of Finance*, *LXVII*(1), 271-311.

Gopalan, R., Udell, G. F., & Yerramilli, V. (2011). Why Do Firms Form New Banking Relationships? *Journal of Financial and Quantitative Analysis*, *46*(5), 1335-1365.

Griffin, J., Lowery, R., & Saretto, A. (2014). Complex Securities and Underwriter Reputation: Do Reputable Underwriters Produce Better Securities? *Review of Financial Studies*, *27*(10), 2872-2925.

Griffin, J. M., Harris, J. H., & Topaloglu, S. (2007). Why are IPO investors net buyers through lead underwriters? *Journal of Financial Economics*, *85*(2), 518-551.

Gunay, E., & Ursel, N. (2015). Underwriter competition in accelerated seasoned equity offerings: Evidence from Canada. *Journal of International Financial Markets, Institutions and Money*, *34*, 94-110.

Hansen, R. S., & Torregrosa, P. (1992). Underwriter Compensation Corporate Monitoring. *The Journal of Finance*, *47*(4), 1537-1555.

Heckman, J. J. (1979). Sample Selection Bias as a Specification Error. *Econometrica: Journal of the Econometric Society*, *47*(1), 153-161.

Hoberg, G. (2007). The Underwriter Persistence Phenomenon. *The Journal of Finance*, *LXII*(3).

Hu, W. Y., & Ritter, J. R. (2007). Multiple Bookrunners in IPOs. *Working Paper*, (352), 1-54.

Huang, R., Shangguan, Z., & Zhang, D. (2008). The networking function of investment banks: Evidence from private investments in public equity. *Journal of Corporate Finance*, *14*(5), 738-752.

Huang, R., & Zhang, D. (2011). Managing Underwriters and the Marketing of Seasoned Equity Offerings. *Journal of Financial and Quantitative Analysis*, *46*(1), 141-170.

Iannotta, G., & Navone, M. (2008). Which Factors Affect Bond Underwriting Fees? The Role of Banking Relationships. *European Financial Management*, *14*(5), 944-961.

Jackson, G. (2016). Banks prosper from euro company debt rush. *Financial Times*, pp. 2015-2017.

James, C. (1992). Assets and the Relationship-Specific Pricing of Underwriter Services. *The Journal of Finance*, *47*(5), 1865-1885.

Jenkinson, T., & Jones, H. (2007). IPO Pricing and Allocation: A Survey of the Views of Institutional Investors. *Review of Financial Studies*, *22*(4), 1477-1504.

Jeon, J. Q., Lee, C., Nasser, T., & Via, M. T. (2015). Multiple lead underwriter IPOs and fi rm visibility. *Journal of Corporate Finance*, *32*, 128-149.

Jeon, J. Q., & Ligon, J. A. (2011). The role of co-managers in reducing flotation costs: Evidence from seasoned equity offerings. *Journal of Banking & Finance*, *35*(5), 1041-1056.

Jo, H., Kim, Y., & Shin, D. (2012). Underwriter syndication and corporate governance. *Review of Quantitative Finance and Accounting*, *38*, 61-86.

Kahle, K. M., & Stulz, R. M. (2013). Access to capital, investment, and the financial crisis. *Journal of Financial Economics*.

Kanatas, G., & Qi, J. (1998). Underwriting by Commercial Banks : Incentive Conflicts , Scope Economies , and Project Quality. *Journal of Money, Credit and Banking*, *30*(1), 119-133.

Kanatas, G., & Qi, J. (2003). Integration of Lending and Underwriting : Implications of Scope Economies. *The Journal of Finance*, *58*(3), 1167-1191.

Lee, S. W., & Mullineaux, D. J. (2004). Monitoring, Financial Distress, and the Structure of Commercial Lending Syndicates. *Financial Management*, *33*(3), 107-130.

Levis, M., Meoli, M., & Migliorati, K. (2014). The rise of UK Seasoned Equity Offerings (SEOs) fees during the financial crisis. The role of institutional shareholders and underwriters. *Journal of Banking & Finance*.

Livingston, M., & Miller, R. E. (2000). Investment Bank Reputation and the Underwriting of Nonconvertible Debt. *Financial Management*, *29*(2), 21-34.

Ljungqvist, A., Marston, F., & Wilhelm, W. J. (2006). Competing for Securities Underwriting Mandates : Banking Relationships and Analyst Recommendations. *The Journal of Finance*, *LXI*(1), 301–340.

Ljungqvist, A., Marston, F., & Wilhelm, W. J. (2009). Scaling the hierarchy: How and why investment banks compete for syndicate Co-management appointments. *Review of Financial Studies*, *22*(10), 3978-4007.

McCahery, J., & Schwienbacher, A. (2010). Bank reputation in the private debt market. *Journal of Corporate Finance*, *16*(4), 498-515.

Megginson, W. L., & Weiss, K. A. (1991). Venture Capitalist Certification in Initial Public Offerings. *The Journal of Finance*, *46*(3), 879-903.

Morrison, A. D., Schenone, C., Thegeya, A., & Wilhelm, W. J. (2014). *Investment-Banking Relationships : Investment-Banking Relationships : 1933-2007*.

Narayanan, R. P., Rangan, K. P., & Rangan, N. K. (2004). The role of syndicate structure in bank underwriting. *Journal of Financial Economics*, *72*(3), 555-580.

Narayanan, R. P., Rangan, K. P., & Rangan, N. K. (2006). The Effect of Private-Debt-Underwriting Reputation on Bank Public-Debt Underwriting. *Review of Financial Studies*, *20*(3), 597-618.

Neupane, S., & Thapa, C. (2013). Underwriter reputation and the underwriter–investor relationship in IPO markets. *Journal of International Financial Markets, Institutions and Money*, *24*, 105-126.

Panyagometh, K., & Roberts, G. S. (2010). Do lead banks exploit syndicate participants? Evidence from ex post risk. *Financial Management*, *39*(1), 273-299.

Peristiani, S., & Santos, J. a. C. (2010). Has the US Bond Market Lost its Edge to the Eurobond Market?. *International Review of Finance*, *10*(2), 149-183.

Pichler, P., & Wilhelm, W. (2001). A Theory of the Syndicate: Form Follows Function. *Journal of Finance*, *56*(6), 2237-2264.

Popescu, M., & Xu, Z. (2011). Secondary Market Liquidity of Initial Public Offerings. *Financial Management*, 199-218.

Rajan, R. G. (1992). Insiders and Outsiders: The Choice between Informed and Arm's-Length Debt. *The Journal of Finance*, *47*(4), 1367-1400.

Ross, D. G. (2010). The «Dominant Bank Effect:» How High Lender Reputation Affects the Information Content and Terms of Bank Loans. *Review of Financial Studies*, *23*(7), 2730-2756.

Roten, I. C., & Mullineaux, D. J. (2002). Debt underwriting by commercial bank-affiliated firms and investment banks: More evidence. *Journal of Banking & Finance*, *26*(4), 689-718.

Schenone, C. (2004). The Effect of Banking Relationships on the Firm ' s IPO Underpricing. *The Journal of Finance*, *LIX*(6), 2903-2957.

Sette, E., & Gobbi, G. (2015). Relationship lending during a financial crisis. *Journal of the European Economic Association*, *13*(3), 453-481.

Shivdasani, A., & Song, W.-L. (2011). Breaking down the barriers: Competition, syndicate structure, and underwriting incentives. *Journal of Financial Economics*, *99*(3), 581-600.

Song, W.-L. (2004). Competition and Coalition among Underwriters : The Decision to Join a Syndicate. *The Journal of Finance*, *59*(5), 2421-2444.

Sufi, A. (2004). Does joint production of lending and underwriting help or hurt firms? A fixed effects approach. *Unpublished Manuscript*, *Mimeo*, 42.

Sufi, A. (2007). Information Asymmetry and Financing Arrangements : Evidence from Syndicated Loans. *The Journal of Finance*, *LXII*(2), 629-668.

Tunick, B. E. (2004). Lowering Fees , Hurting Trading Multiple books upset investment banks as lenders muscle in. *The Investment Dealer's Digest*, 22-24.

Yasuda, A. (2005). Do Bank Relationships Affect the Firm ' s Underwriter Choice in the Corporate-Bond Underwriting Market ? *The Journal of Finance*, *LX*(3).

Yasuda, A. (2007). Bank relationships and underwriter competition: Evidence from Japan. *Journal of Financial Economics*, *86*(2), 369-404.

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