

Incidence and Structure of Buyout Syndicates: The Effects of Target and Lead-Investor Characteristics

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Abstract:

This paper empirically investigates what target and lead-investor characteristics affect the incidence and structure of buyout syndicates, using a hand-collected dataset of 868 European buyouts during 1999–2009. Regarding the incidence of syndication, we find that financiers syndicate more often for large deals targeting firms that exhibit high default risk in countries with a civil-law legal tradition. Moreover, syndication happens more frequently when investors are large institutions with limited buyout experience, extensive lead experience, and lack of knowledge about target-country institutions. Bank subsidiaries also syndicate more regularly. Concerning syndicate structure, we conclude that lead investors invite a larger number of participants and retain a smaller fraction for large deals involving civil-law firms. In contrast, more concentrated syndicates arise for buyouts targeting firms that exhibit high adverse-selection and moral-hazard problems. Finally, lead investors with larger buyout experience but smaller lead experience invite fewer participants and retain a larger fraction of the deal.

Keywords: Buyout, Syndication, Information and incentive problems, Legal institutions

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EFM classification: 110 ; 160 ; 750 ; 810

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I. Introduction

The European buyout market has grown considerably during the last two decades, from €4 billion invested in 1992 to €58 billion in 2007. While deteriorating economic and financial conditions have led to a substantial drop in buyout activity thereafter, recovery signs already appeared in the third quarter of 2009. Syndication, where multiple financiers jointly buy a stake in a target firm, has grown highly important. According to EVCA, about 15% of European buyout deals were syndicated in recent years. This number even corresponds to 44% of the total amount invested in the European buyout market (EVCA, 2009).

This article is the first to examine (1) the factors that incite investors to syndicate in European buyout transactions, and (2) the factors that shape syndicate structure, i.e. the number of investors that participate in the buyout and the fraction of the deal retained by the lead financier. The specific unit of analysis in our study is the dyadic relationship between the target firm and the lead investor, where the latter decides whether to syndicate or not, based on the characteristics of the target firm and its own resources and capabilities. Moreover, by also examining syndicate structure, we provide new insights into how lead investors trade off the benefits and costs associated with syndication. The underlying idea is that potential information and incentive problems with other syndicate members – which may preclude syndication – can be alleviated by adjusting the structure of the syndicate.

Overall, we provide three contributions to the literature. First, in spite of a large literature on syndication of venture capital (e.g., Sorenson and Stuart, 2001; Lockett and Wright, 2003; Manigart *et al.*, 2006; Dimov and Milanov, 2010) and bank loans (e.g., Esty and Megginson, 2003; François and Missonier-Piera, 2007; Sufi, 2007; Panyagometh and Roberts, 2010), only very few scholars have investigated syndication in the context of buyout transactions. Nevertheless, it is worthwhile to separately examine buyout syndicates, as several discrepancies exist between these various types of syndicates. Specifically, in comparison to VC syndicates, the syndication concept can be defined more

clearly in a buyout context, as buyout deals entail a once-for-all financing structure. This can help to avoid the complexities associated with multiple financing rounds in VC deals. In addition, buyout-backed firms exhibit other characteristics than VC-backed companies, implying that other benefits and costs associated with syndication could be important. Next, in comparison to bank loan syndicates, buyout syndicates involve only a single lead financier, whereas multiple co-agents, such as a documentation agent, an administrative agent, and a collateral agent may be present in a bank loan syndicate (François and Missonier-Piera, 2007). This presence of several co-agents could lead to specific incentive problems in bank loan syndicates that do not arise in buyout syndicates.

Second, existing research on buyout syndicates has, using a survey methodology, focused primarily on establishing the motives underlying syndication, but has not yet investigated what target and lead-investor characteristics actually incite financiers to syndicate. The only exception is the recent study by Meuleman *et al.* (2009), who focus mainly on the incentive problems between target firms and investors for buyouts in the UK. We build further on this study by also examining in more detail potential information and incentive problems with other syndicate members at the time the syndicate is set up. Besides, the literature to date has made the implicit assumption that investors assess target-firm characteristics and decide whether to syndicate or not, regardless of their own resources and capabilities (Dimov and Milanov, 2010). In addition, we are the first to examine the relation with syndicate structure, which could also stimulate further development of theory.

Finally, this article is the first to examine buyout syndication in Europe, whereas previous buyout research has focused almost exclusively on public-to-private transactions in Anglo-Saxon countries. Continental European deals are worthwhile to consider, as (1) the majority of target firms is non-listed before the buyout and (2) a large fraction of deals are cross-border in nature. Hence, as our hand-collected dataset also includes data on non-listed companies that exhibit specific information and incentive problems, we are able to measure and investigate the particular effects of these target-firm

characteristics on the incidence and structure of buyout syndicates. In addition, the greater availability of firm-level accounting data for non-listed firms in Europe allows us to measure ex-ante information and incentive problems more accurately. Up till now, target-investor incentive problems have been measured by the absolute amount invested by target management and by the use of ratchets (e.g., Meuleman *et al.*, 2009). Yet, these variables could be endogenously determined (Himmelberg *et al.*, 1999).¹ Furthermore, as a large fraction of deals are cross-border in nature and Europe is heterogeneous in terms of legal traditions and culture, we can analyze how the lack of investor knowledge about target-country institutions affects syndication decisions. In addition, we are able to investigate how country-level investor protection influences the incidence and structure of European buyout syndicates.

Regarding the incidence of syndication, we conclude that investors syndicate more frequently for large deals targeting firms that exhibit high default risk. In contrast, target adverse-selection and moral-hazard problems do not affect the incidence of syndication. Next, financiers syndicate more often for target firms domiciled in a country with a civil-law legal tradition. Moreover, large financiers with limited buyout experience, extensive lead experience, and lack of knowledge about target-country institutions tend to syndicate more often. Bank subsidiaries also syndicate more regularly.

Regarding syndicate structure, we conclude that lead investors trade off the benefits and costs associated with syndication. Specifically, lead investors shape less concentrated syndicates for large deals targeting civil-law firms, while they shape more concentrated syndicates for deals targeting firms with high adverse-selection and moral-hazard problems. Moreover, financiers having larger buyout experience, limited lead experience, and extensive knowledge about target-country institutions invite fewer participants and retain a larger fraction of the deal. Overall, this article provides evidence that syndication decisions are driven by target and lead-investor characteristics that call for syndication as

¹ Moreover, the amount invested by target management may not always bear a negative relation with target moral-hazard problems. Specifically, in Continental European countries, where ownership of privately held corporations is concentrated, agency problems of equity between management and shareholders shift to conflicts of interest between controlling and minority shareholders. Hence, when target management obtains the majority of target equity, whereas buyout investors only obtain a minority stake, target-investor incentive problems could be even more severe.

well as by the wish to alleviate potential agency problems with other syndicate members, which occurs primarily through increasing syndicate concentration.

The remainder of this article is organized as follows. Section II offers the theoretical framework. In Section III, we present our various hypotheses. Section IV describes the sample, while the empirical results are discussed in Section V. Section VI presents the outcome from additional robustness checks. Finally, Section VII concludes and formulates implications for theory and practice.

II. Theoretical framework

The literature on syndication of venture capital and bank loans has indicated several overlapping motives underlying syndication. First, according to the risk-diversification motive, syndication enables financiers to invest smaller amounts of money in a larger number of target firms. This feature could be valuable in the context of buyouts, as a well-diversified portfolio may be difficult to achieve, given the established nature and size of many target firms and given the illiquidity of buyout investments. Second, based on the selection motive, syndication may improve project selection by reducing target-investor information asymmetries, as participant investors in the syndicate provide second opinions about the value, risk profile, and growth potential of the target firm. Third, the value-added motive states that syndication enables financiers to add more value to the target firm as a result of sharing complementary knowledge and management skills. Finally, based on the deal-flow motive, syndication may generate more future deal flow because of investor reciprocity, allowing financiers to select target firms from a wider range of possible investments.

Nonetheless, several disadvantages are associated with syndication, which have been largely neglected in the literature to date, except for Meuleman *et al.* (2009). First, the lead investor typically has more information about the target firm at the time of the investment decision, resulting from a prior due diligence. Non-lead investors also screen the target firm before deciding whether to accept the

syndication invitation or not, but they usually spend considerably less time in doing so and typically rely on the information provided by the lead investor. Hence, there exist an information asymmetry between the lead financier and other syndicate members regarding the value, risk profile, and growth potential of the target firm. As a result, the lead financier may prefer to execute high-quality deals on a stand-alone basis and invite participants for deals where its inside information is less favorable (Panyagometh and Roberts, 2010). Second, as participant investors delegate certain recurrent tasks to the lead investor, such as monitoring of the target firm, the lead financier acts as an agent for the other syndicate members. As the actions of the lead investor are often difficult and costly to verify by non-lead investors, incentives to shirk may arise. The reason is that the lead financier can no longer internalize the full benefits of its costly monitoring activities. These incentive problems likely are more severe in deals where monitoring by the lead investor is highly important. Finally, decision making in a syndicate could be time-consuming, as decisions are usually taken by consensus (Meuleman *et al.*, 2009). Hence, syndicate size may positively affect the time needed to reach a consensus, as a larger number of investors in the syndicate could lead to more divergent opinions.

III. Development of hypotheses

In this section, we develop several testable hypotheses regarding the incidence and structure of buyout syndicates. Our conjectures are summarized in Table 1, which also displays an overview of all dependent and explanatory variables.

III.1 Target-firm characteristics

Several target-firm characteristics may affect the incidence and structure of buyout syndicates. We expect DEAL VALUE, calculated as the natural logarithm of the (inflation-adjusted) price paid by investors for their equity stake in the target firm, to influence syndication decisions. Regarding the

incidence of syndication, investors may prefer syndication for large deals to bundle funds, as such deals may require capital exceeding the funds of a single investor. Besides, from a risk-diversification point of view, large deals may be syndicated more often to reduce exposure to a single target firm. With respect to syndicate structure, lead investors may invite a larger number of participants for large deals, as every invited financier may only want to invest a maximum amount in one transaction. For the same reason, lead investors may also retain a smaller fraction of the deal. Hence, we conjecture:

H1: Deal value has a positive effect on the incidence of syndication and the number of investors, but a negative influence on the fraction retained by the lead investor.

Target default risk, proxied by Altman's (1993) Z''-score, a version of the Altman (1968) Z-score that was developed for non-listed firms, could substantially influence syndication decisions, as the ultimate failure of a target firm could hugely affect the profitability of investment portfolios. Regarding the incidence of syndication, investors may syndicate deals targeting high default-risk firms more regularly, in line with the risk-diversification motive. In addition, given the selection and value-added motives, investors may syndicate such deals more often to obtain complementary knowledge and management skills, which may also help to prevent a target default in the first place. With respect to syndicate structure, two major (and opposite) motives could be at play. On the one hand, lead investors could attempt to maximize the benefits from syndication by inviting a larger number of participants and by retaining a smaller fraction of the deal to reduce their exposure to target default risk. On the other hand, lead investors could minimize the costs underlying syndication by shaping a structure that mainly alleviates potential incentive problems with other syndicate members. Specifically, when the target firm exhibits high default risk, screening and monitoring become more important. Besides, more concentrated syndicates may facilitate a faster resolution of financial distress because of smaller free-rider problems and because of more efficient decision making (Cumming, 2006). In addition, to induce participants to accept the invitation, lead investors could retain a larger fraction of the deal to credibly signal their hands-on approach and to pre-commit not to shirk. Consequently, we conjecture:

***H2:** Target default risk has a positive effect on the incidence of syndication, but its impact on syndicate structure needs to be established empirically.*

As European buyout targets are typically non-listed before their takeover, adverse-selection risk could be extensive. The reason is that non-listed companies publish less information than publicly quoted firms. Conversely, private information communicated by target management may be over-stated to provide a more attractive picture of the company or may be difficult to verify (e.g., Robbie and Wright, 1995). Hence, information asymmetries typically restrict investors in their evaluation of target value, risk, and growth potential. Target adverse-selection problems will be proxied by (1) the natural logarithm of target age (TARGET AGE), as older companies have a longer track record, and by (2) the one-year lagged sales growth rate (TARGET SALES GROWTH), as growth opportunities are usually surrounded by more information asymmetries. Regarding the incidence of syndication, we expect investors to syndicate more often for deals targeting firms that exhibit high adverse-selection risk, to reduce their exposure to the risk that the target turns out to be a ‘lemon’ ex post. In addition, given the selection motive, investors may syndicate more frequently to obtain second opinions about the value and risk profile of the target company. As far as syndicate structure is concerned, lead investors could attempt to maximize the benefits from syndication by inviting a larger number of participants and by retaining a smaller fraction of the deal. Alternatively, lead financiers could endeavor to minimize the costs underlying syndication by shaping a structure that mainly alleviates conflicts of interest with other syndicate members. Specifically, when target adverse-selection problems are substantial, participant investors could be highly concerned about the risk that the lead investor will syndicate out only lower-quality deals. Hence, lead investors may set up a smaller syndicate to more actively involve other investors. Likewise, retaining a larger fraction of the deal could help to signal its quality. Overall, we conjecture:

***H3:** Target adverse-selection risk has a positive effect on the incidence of syndication, but its impact on syndicate structure needs to be established empirically.*

Once the buyout contract has been signed, target management could try to expropriate investors and realize private benefits of control. For instance, target management may try to manipulate cash flows in order to please the buyout investors and to fulfill the requirements of the equity ratchet to obtain a larger equity allocation. In addition, target management may also follow suboptimal investment policies to obtain non-pecuniary benefits. This moral-hazard problem may be particularly relevant for firms with (1) a lower ratio of property, plant, and equipment to total assets (TARGET PPE) and (2) a higher ratio of intangible assets to total assets (TARGET INTANGIBLES). The reason is that hard assets are easier to monitor by investors and to verify by the court, in contrast to soft assets. Hence, hard assets are less subject to discretionary managerial spending. Regarding the incidence of syndication, we conjecture a positive relation between expected target moral-hazard problems and the probability of syndication, in line with the risk-diversification motive. As far as syndicate structure is concerned, lead investors could attempt to maximize the benefits from syndication by shaping a structure that mitigates their exposure to target moral-hazard risk by inviting a larger number of participants and by retaining a smaller fraction of the deal. Alternatively, lead financiers may endeavor to minimize the costs from syndication by shaping a structure that mainly alleviates incentive problems with other syndicate members. Specifically, when the target firm exhibits high moral-hazard risk, the monitoring role of the lead investor becomes more important. Hence, lead investors could invite fewer participants, as smaller syndicates involve smaller free-rider problems and a faster decision making, and retain a larger fraction of the deal to credibly pre-commit not to shirk on monitoring. In sum:

H4: Target moral-hazard risk has a positive effect on the incidence of syndication, but its impact on syndicate structure needs to be established empirically.

Within Europe, various legal traditions are present, with common-law countries exhibiting the strongest investor protection and law enforcement, followed by Scandinavian, German, and French civil-law countries (La Porta *et al.*, 1998). We proxy legal institutions by TARGET CIVIL, a dummy variable that equals one if the target firm is domiciled in a civil-law country, and zero otherwise.

Alternatively, we construct the dummy variables TARGET FRENCH CIVIL, TARGET GERMAN CIVIL, and TARGET SCAND CIVIL. Besides, we consider the investor rights index developed by Berkowitz *et al.* (2003) (TARGET INVESTOR RIGHTS) and the law enforcement index constructed by Leuz *et al.* (2003) (TARGET LAW ENFORCEMENT). When buyout financiers invest in target firms domiciled in a civil-law country, they face less investor rights, while their access to information on the target firm is typically less complete and less transparent, as weak legal systems usually encompass inadequate disclosure mechanisms (Cumming *et al.*, 2010). Regarding the incidence of syndication, we expect investors to syndicate more regularly for deals targeting firms with a civil-law legal tradition, in line with the risk-diversification motive. For the same reason, we expect lead financiers to shape a syndicate structure that reduces their exposure to target-country legal risk by inviting a larger number of participants and by retaining a smaller fraction of the deal. Indeed, lead investors cannot mitigate target-country legal risk by their screening and monitoring, but can only try to reduce their exposure to this type of risk, as the institutional tradition of the country of the target firm is exogenous. In sum, we postulate:

H5: Target-country legal risk has a positive effect on the incidence of syndication and the number of investors, but a negative influence on the fraction retained by the lead investor.

III.2 Lead-investor characteristics

In addition to target-firm characteristics, several lead-investor characteristics, such as investor size, affiliation, buyout experience, lead experience, and knowledge about target-country institutions, are likely to influence syndication decisions. We expect investor size, proxied by the natural logarithm of the number of employees (INVESTOR SIZE) to affect syndication behavior. Regarding the incidence of syndication, we hypothesize large investors to syndicate more frequently, as these financiers have a bigger appetite for deal flow. Specifically, large investors need to invest in more deals than smaller financiers, as they have more funds under management (see also Wright and Lockett, 2003; Manigart *et*

al., 2006). Buyout investors thus need to ensure that funds obtained from limited partners or their parent companies are put at work. With respect to syndicate structure, we conjecture large investors to invite a larger number of participants, as doing so enhances the odds of a future re-invitation, thereby generating more future deal flow. For the same reason, we expect large financiers to retain a smaller fraction of the deal, *ceteris paribus*. What's more, the desire of being re-invited in the future could already impose a disciplinary effect on the lead investor to behave dutifully, making the retention of a larger fraction of the deal less important as a prerequisite for participants to invest. In sum:

H6: Investor size has a positive effect on the incidence of syndication and the number of investors, but a negative influence on the fraction retained by the lead investor.

Investor affiliation, proxied by a dummy variable that equals one if the lead financier is a bank subsidiary and zero otherwise (BANK SUBSIDIARY), could influence syndication decisions too. Regarding the incidence of syndication, bank subsidiaries may syndicate more frequently, as investment managers in banks typically receive fixed-pay compensation without carried interest. This remuneration scheme could lead to a lower level of risk taking (Dushnitsky and Shapira, 2010). Besides, bank subsidiaries typically inherit their parent's business culture, making them less willing to assume risks than other types of investors (see Huyghebaert, 2010). For the same reasons, we expect bank subsidiaries to shape a structure that mitigates their exposure to a single target firm by inviting a larger number of participants and by retaining a smaller fraction of the deal. Hence, we hypothesize:

H7: Bank subsidiaries syndicate more frequently than other financiers, invite a larger number of participants, and retain a smaller fraction of the deal.

Buyout experience, proxied by the natural logarithm of the number of previous buyouts executed as a single investor or as a lead investor in a syndicate during the last two years (BUYOUT EXPERIENCE), could substantially affect syndication decisions. Regarding the incidence of syndication, investors with larger buyout experience may syndicate less frequently, as these financiers do not have to overcome the liability of newness anymore. That is, buyout investors accumulate

knowledge regarding selection, monitoring, and value creation through their ongoing investments. Hence, these investors could be more competent in evaluating investment proposals and in mitigating target moral-hazard problems. Consequently, the selection and value-added motives tend to be less important for highly experienced buyout investors. Likewise, experienced lead investors may invite fewer participants and retain a larger fraction of the deal, as their need to obtain more diverse information and support likely is smaller. Consequently, we expect:

H8: Buyout experience has a negative effect on the incidence of syndication and the number of investors, but a positive impact on the fraction retained by the lead investor.

Experience as a lead investor, proxied by the percentage of buyout transactions in which the financier has acted as a lead investor during the last two years (LEAD EXPERIENCE), could substantially influence syndication decisions. Regarding the incidence of syndication, financiers with larger lead experience may syndicate more often to stay an attractive syndication partner and to ensure a high future deal flow, resulting from investor reciprocity. The reason is that these financiers have established numerous relations with other buyout investors and are more likely to have developed a reputation for not shirking on screening and monitoring and for efficiently managing a syndicate. Therefore, in line with the deal-flow motive, financiers who have syndicated a lot in the past may also syndicate more often in the future, to preserve that reputation. Next, lead investors with a larger lead experience may invite a larger number of participants to preserve their numerous relations with other buyout investors. In addition, these financiers may retain a smaller fraction of the deal, as potential incentive problems with other syndicate members are less likely. The reason is that behaving opportunistically would result in a breach of trust, which would negatively affect future deal flow (Guler and McGahan, 2007). Consequently, we postulate:

H9: Lead experience has a positive effect on the incidence of syndication and the number of investors, but a negative impact on the fraction retained by the lead investor.

Lack of knowledge about target-country institutions could influence syndication decisions. We will construct two proxies, each capturing a different aspect of the institutional environment in which the target firm operates. First, LEGAL DISTANCE is a dummy variable that equals one if the lead financier and the target firm are domiciled in countries with different legal characteristics, i.e. common law as opposed to civil law. Second, CULTURAL DISTANCE is the Euclidean distance between the Hofstede (1980) indices, namely power distance, individualism, uncertainty avoidance, and masculinity of the country of the lead investor and that of the target firm. Culture, defined as shared values and practices, may serve as a standard for the justification of behavior by others and thus shape inhabitants' views of legitimacy. With respect to the incidence of syndication, we conjecture financiers who invest in target firms outside their legal or cultural scope to syndicate more frequently, as its existing knowledge and capabilities may have only limited application in countries with a different legal or cultural context (Bruton *et al.*, 2005). Hence, investors with limited knowledge about the institutional environment in which the target firm operates may invite indigenous participants to deal with local specificities (see also Sorenson and Stuart, 2001; Sufi, 2007). Hence, the primary motive underlying syndication is to learn more about the legal tradition and the culture of the country of the target firm. With respect to syndicate structure, lead financiers could invite a larger number of indigenous participants, as additional investors may provide extra information about target-country institutions. Besides, in line with the deal-flow motive, the lead investor could invite a larger number of participants, as multiple local investors could re-invite the lead financier in the future, which may lead to a faster expansion of its legal or cultural scope. Furthermore, we expect lead investors to retain a smaller fraction of the deal, as these financiers do not need to signal deal quality to the same extent. Consequently, we postulate:

H10: Knowledge about target-country institutions has a negative effect on the incidence of syndication and the number of investors, but a positive impact on the fraction retained by the lead investor.

Insert Table 1

V. Sample selection and description

This study uses a unique hand-collected dataset that includes information on all European buyouts that were completed during 1999–2009. Transaction data were retrieved from Zephyr, which goes back to 1997,² while accounting and ownership information on the target firms and the lead investors were gathered from Amadeus.³ To deal with missing values for investor characteristics in Amadeus and to determine the affiliation of the lead investor, we used the annual EVCA directories of members and examined the websites of national associations and buyout investors. Furthermore, the EVCA yearbooks were used to collect detailed information on total funds raised and total funds invested in the buyout industry.

To be retained in the sample, the target firm had to be registered in Europe⁴ and had to be private-equity buyout-backed,⁵ which yielded an initial sample of 3,506 transactions. We removed 285 divisional buyouts, as accounting information on divisions is lacking in Amadeus. We also deleted 284 target firms reporting a primary SIC code that starts with 6, as these financial firms file annual accounts under different accounting standards. Next, we excluded 304 buyouts where investors acted through a special purpose vehicle without providing accounting or ownership information. Nevertheless, we do take the above deals into account when calculating investor experience variables. To distinguish the lead investor from participants in every syndicate, we first examined all deal comments in Zephyr,

² The Zephyr database of Bureau van Dijk contains information on over 800,000 transactions, covering M&As, IPOs, joint ventures, stock repurchases, and PE deals. Compared to the SDC Platinum database of Thomson Financial and Mergerstat, Zephyr has a larger coverage of European transactions and provides extensive deal comments. In addition, Zephyr includes all deals without a minimum limit on deal value, which considerably enhances data coverage.

³ The Amadeus database of Bureau van Dijk is a pan-European database containing annual accounts on over 15 million listed and non-listed firms. There are no specific size requirements for a company to be included in this database. The way information is presented has been approved by leading accounting bodies and practitioners in the field and new data are checked rigorously before entered into the database.

⁴ The following countries are included in our study: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Norway, Poland, Portugal, Romania, Russian Republic, Slovakia, Slovenia, Spain, Switzerland, Ukraine, and United Kingdom.

⁵ Hence, management buyouts without the aid of an external investor are not included in our sample. These MBOs occurred mostly in the UK.

mentioning the initiating investor in about 60% of cases. If the lead financier could not be identified from Zephyr, we considered the investor financing the largest fraction of the deal as lead financier (see also Wright and Lockett, 2003; Meuleman *et al.*, 2009). Unfortunately, we lost 110 syndicated transactions for which we could not identify the lead investor, resulting in a raw dataset of 2,523 observations, as investor characteristics were thus also missing for these transactions. Finally, we had to remove 1,655 observations with missing data on at least one explanatory variable, resulting in a final dataset of 868 buyout transactions.⁶

Table 2 displays the absolute and percentage distribution of syndication, transaction year, target industry, and target country for the full and syndicated sample, before and after listwise deletion. 14.70% of deals in the full sample are syndicated, with most buyouts occurring in the later sampling years (2005–2008). The number of deals declines sharply in 2009, following the subprime crisis. Target firms are mainly active in manufacturing, food, and personal and business services. The geographical distribution of deals is highly dispersed, with a considerable fraction of target firms being domiciled in France and in the UK, followed by Germany, Italy, The Netherlands, and Spain. Table 2 further reveals that the retained sample is no complete random drawing from the raw sample, as the syndication and geographical distribution differ to some extent. In fact, deals targeting Russian, Slovakian, Slovenian, and Ukrainian firms drop out completely from the full sample, while the importance of buyouts in Germany also declines considerably.⁷

 Insert Table 2

⁶ As 65.60% of observations are lost due to missing accounting values, we also followed Chiplin *et al.* (1997) and imputed missing values using the expectations-maximisation algorithm, which imputes missing values by OLS estimation using all other known variables for each case and adding a random term to each imputed value. The reason is that estimates based on imputed values alone contain too little variance. Besides, as imputed values are obtained from the sample and not from the population, we also bootstrapped new samples from the original dataset and derived estimates of the imputed values by pooling the results from the original and the bootstrapped samples. Qualitatively similar conclusions are obtained.

⁷ Listwise deletion does not lead to biased estimates in our sample, as using the full sample with imputed values obtained from the expectations-maximisation algorithm leads to qualitatively similar conclusions (see also Little and Rubin, 1987).

V.1 Descriptive statistics

Table 3 reports summary statistics on the dependent and explanatory variables. All explanatory variables are measured at the end of the fiscal year prior to the buyout and are winsorized at 5%–95% to remove extreme values in either tail of the distribution.⁸ Descriptive statistics on SYNDICATION and all explanatory variables are calculated for the full sample, whereas summary statistics on NUMBER OF INVESTORS and LEAD FRACTION could – by definition – be computed for the syndicated subsample only. We present summary statistics before any logarithmic transformation of the data to facilitate interpretation. Table 3 indicates that 17.05% of deals in our sample are syndicated, with syndicates being mostly dyads, as the average (median) syndicate size equals 2.39 (2). This number is comparable to the average of 2.4 found by Meuleman *et al.* (2009) for the UK. Next, the average lead investor retains 59.53% of the deal. Regarding target characteristics, the average deal value equals €156,449,749. In addition, the average target firm entails a Z'-score of 1.44 and is 19.06 years old. The one-year lagged target sales growth rate averages to 14.16%. The average target firm has a ratio of hard assets to total assets of 20.07%, while intangible assets account for 7.06% of total assets. 81.79% of all buyouts occurred in a civil-law country, with 57.15% of deals arising in a French civil-law country. Regarding investor characteristics, the average lead financier employs 92 employees. Table 3 further indicates that 73.20% of investors are independent, with the bulk of captive investors being bank subsidiaries (BANK SUBSIDIARY). Subsidiaries of non-financial industrial corporations (CORPORATE SUBSIDIARY), funds affiliated with insurance companies (INSURANCE SUBSIDIARY), and funds sponsored by governments and public organizations (GOVERNMENT AGENCY) are only of marginal importance in our sample.⁹ On average, investors executed 3.69 transactions in the two years before the deal and syndicated 5.71% of their executed buyouts.

⁸ Qualitatively similar conclusions are obtained when explanatory variables are winsorized at 1%–99%, although *p*-values are somewhat higher for the incidence and structure of syndication, especially for TARGET Z-SCORE.

⁹ The virtual absence of corporate investors, insurance subsidiaries, and government agencies in our sample is likely due to differences in investment preferences. Huyghebaert (2010) concludes that corporate investors focus on early-stage investments to identify projects and ideas that can contribute to their parent company's future growth, whereas funds affiliated with insurance companies prefer middle-stage investments. Lastly, government agencies focus on early-stage investments to stimulate innovation, economic growth, and job creation.

Moreover, investors prefer to invest in target firms domiciled in a country with the same legal tradition and culture. Table 3 also displays that the buyout investors in our sample have no industry specialization, as *INDSPECIALIZATION*, i.e. the fraction of deals executed in the same industry as that of the target firm over the last two years, has an average (median) value of 0.04 (0.00). Hence, consistent with De Clercq and Dimov (2008), we conclude that buyout investors are generalist investors and do not focus on specific industries.

 Insert Table 3

Table 4 presents the results from parametric *t*-tests as well as non-parametric Wilcoxon rank-sum tests for all continuous explanatory variables. Panel A investigates the significance of differences between syndicated and non-syndicated transactions, using the full sample of European buyouts. Panel B investigates the significance of differences between dyads, where the lead investor invites a single participant, and non-dyads, involving more than two syndicate members, within the sample of syndicated deals. Panel A indicates that syndication occurs more frequently for large deals and buyouts targeting firms with substantial default risk, considerable intangible assets, and domiciled in a country with weak legal institutions. Furthermore, large investors with larger lead experience syndicate more often. Panel B displays that syndicates entail a larger number of participants for large deals targeting high default-risk companies, older firms with limited sales growth and intangible assets, and domiciled in a country with a weak legal environment. In addition, lead financiers having larger lead experience invite a larger number of participants. Finally, lead investors invite more participants if the cultural distance with the country of the target firm increases.

 Insert Table 4

V. Empirical results

All regression models examining the incidence of syndication are run on the full sample of European buyouts, while syndicate structure is investigated for the syndicated subsample. As SYNDICATION is a dummy variable that equals one for syndicated buyouts, and zero otherwise, we implement logistic regressions. Next, as NUMBER OF INVESTORS is a discrete, non-negative variable, we run Poisson regressions. However, as the assumption of equal conditional mean and variance was violated, we follow Greene (2002) and adjust standard errors by the square root of the ratio of the deviance to the degrees of freedom. Finally, as LEAD FRACTION is a censored continuous variable between zero and one, we run Tobit regressions to explain the fraction of the deal retained by the lead investor.

In addition to the earlier-introduced test variables, we also include a dummy variable that equals one if the lead financier and the target firm are domiciled in a different country and zero otherwise (CROSS-BORDER). The reason is that LEGAL DISTANCE and CULTURAL DISTANCE can have a non-zero value only when the lead investor executes a cross-border transaction. We therefore add CROSS-BORDER as a control variable to ensure the construct validity of the variables proxying for knowledge about target-country institutions. Specifically, as monitoring and value creation are more difficult to realize from a distance, syndication decisions could be different for cross-border deals. Also, interactions between target managers and investors are much richer in face-to-face conversations (Sorenson and Stuart, 2001). Hence, when CROSS-BORDER is omitted, LEGAL DISTANCE and CULTURAL DISTANCE could capture some of these aspects of remoteness. 35.80% of the buyouts in our sample are cross-border deals. Next, we include the level of competition in the European buyout market as a control variable in all regression models. A high level of competition arises primarily from the ‘money-chasing-deals phenomenon’ (Gompers and Lerner, 2000). Specifically, competition for target firms increases tremendously whenever the inflow of capital into the buyout industry exceeds the total demand for funds by target companies, thereby potentially affecting syndication decisions.

COMPETITION is proxied by the ratio of total funds raised minus total funds invested in the buyout market divided by total funds invested. Over the period 1999–2009, this variable has an average value of 0.3425, indicating the presence of excess funds. Competition for target firms was especially high in the years 2000, 2001, 2005, and 2006, while rather limited in the years 1999 and 2004. In order to mitigate reverse causality concerns, we lag this variable by one year in all regressions.

Table 5, Panel A displays pairwise correlations among the continuous variables for the full sample, while Panel B reports these same correlations for the syndicated sample. Following Judge *et al.* (1998), we use $\rho=0.70$ as cutoff level to decide whether or not two explanatory variables can enter a regression model at the same time. All correlations are below 0.70, except for the pairwise correlation between TARGET INVESTOR RIGHTS and TARGET LAW ENFORCEMENT. VIF statistics do not exceed 5.0 for any reported regression model.

Insert Table 5

V.1 Incidence of syndication

Table 6 reports our empirical results on the incidence of syndication. Column 1 displays the results from the base model, whereas other columns also include industry, country, and year dummies. Industry¹⁰ and country dummies are included to account for unobserved industry and country effects. Year dummies are included to control for macroeconomic conditions. Column 3 uses an alternative proxy for target adverse-selection problems, whereas column 4 utilizes another measure for target moral-hazard risk. Next, columns 5–7 examine the effects of target-country legal characteristics in more detail. Finally, column 8 reports the results from a two-stage Heckman (1979) model that accounts for a possible self-selection bias. We follow the same structure for all regression tables hereafter.

¹⁰ Regression models are estimated including industry dummies at the two-digit SIC level, but could not be estimated at the three-digit or four-digit SIC level, due to quasi-complete separation problems.

Regarding target-firm characteristics, we find a positive effect for DEAL VALUE, consistent with the postulation that large deals are syndicated more frequently (H1). Hence, syndication is used to bundle funds and to reduce investor exposure to a single target firm. A similar conclusion arises when using the ratio of deal value to the lead investor's capital under management, which represents the importance of the buyout in the portfolio of the investor under sole investment (not reported).¹¹ In line with our second hypothesis (H2), TARGET Z-SCORE negatively influences the incidence of syndication. Hence, lead financiers seem to syndicate to reduce their exposure to target default risk, while obtaining complementary knowledge and management skills to prevent a target default in the first place. As a robustness check, we use (1) Altman (1968) Z-score without the ratio of market value of equity to book value of debt, as the sample is dominated by non-listed firms, and (2) MacKie-Mason's (1999) ratio, which do not yield different results (not reported). The interaction term of target default risk with TARGET CIVIL is not significant either (not reported).¹² Hence, we find no evidence that target default risk has a stronger influence on the incidence of syndication in countries with weak investor rights. Next, TARGET AGE and TARGET SALES GROWTH are not significant. As a sensitivity check, we use (1) a dummy that equals one if the target firm is publicly listed prior to the buyout (7.85%), as publicly listed firms disclose more information, and (2) the number of four-digit SIC industries the target firm is active in, as companies with more diverse operations could be more difficult to screen. These variables are not significant either (not reported). Hence, we find no evidence whatsoever that target adverse-selection problems induce investors to syndicate. Next, TARGET PPE and TARGET INTANGIBLES bear no significant relation with the incidence of syndication. So, we find no evidence that target moral-hazard problems induce investors to syndicate. Interestingly,

¹¹ The results from non-reported robustness checks are available upon request. All sensitivity checks using different proxies are also executed for the regressions on syndicate structure and yield qualitatively similar conclusions as the ones reported in Section V.2.

¹² The continuous variables that are used as components of the interaction terms are centred to reduce multicollinearity problems. Also, we estimate all models entering only one interaction term at the same time. As a sensitivity check, we also estimate the interaction terms using the methodology developed by Ai and Norton (2003) for non-linear models, as the interaction effect may have a different sign for different values of the explanatory variables. Qualitatively similar results are obtained. The same interaction terms are examined for syndicate structure but are also insignificant.

interactions of adverse-selection and moral-hazard variables with BUYOUT EXPERIENCE bear no significant relation with the incidence of syndication either (not reported). Hence, we find no support for the idea that syndication is used more prominently by inexperienced buyout investors to reduce exposure to target information and incentive problems. Next, results confirm our postulation (H5) that deals targeting firms in a country with a civil-law legal tradition (TARGET CIVIL) entail a larger syndication probability than buyouts involving common-law firms. Hence, investors syndicate more often to reduce their exposure to target-country legal risk. The marginal effect of TARGET CIVIL evaluated at the sample mean shows that the probability of syndication is 10.40% higher for deals in countries with a civil-law tradition than in countries with a common-law legal tradition. Similarly, deals targeting firms domiciled in a country with stronger investor rights (TARGET INVESTOR RIGHTS) and law enforcement (TARGET LAW ENFORCEMENT) exhibit a smaller syndication probability.

Regarding lead-investor characteristics, we find a positive effect of INVESTOR SIZE, indicating that large investors syndicate more frequently (H6). Similar results arise when using (1) the natural logarithm of total assets, and (2) the natural logarithm of capital under management. Next, bank subsidiaries syndicate more often, suggesting that these financiers are less willing to assume risk, in line with H7. The marginal effect of BANK SUBSIDIARY evaluated at the sample mean reveals that the probability of syndication is 6.18% higher for bank subsidiaries than for other investors. BUYOUT EXPERIENCE negatively influences the incidence of syndication, supporting the idea that financiers with larger buyout experience do not have to overcome the liability of newness anymore (H8). As investors can also develop buyout experience from investing as a participant, we use the number of previous buyout transactions, executed as a stand-alone, as a lead, or as a participant in a syndicate as a robustness check. As an additional robustness check, we utilize the natural logarithm of the age of the lead investor. These sensitivity checks yield similar results (not reported). As expected (H9), investors

with a larger lead experience (LEAD EXPERIENCE) syndicate more frequently, which may help them to remain an attractive syndication partner and to ensure a high future deal flow. As a robustness check, we execute all previous analyses using a five-year moving window to calculate the experience variables. Results are qualitatively similar, although p -values are slightly larger (not reported). Next, we find a positive effect of LEGAL DISTANCE and CULTURAL DISTANCE on the incidence of syndication (H10). These findings indicate that investors syndicate more often when having only limited knowledge about the institutions of the country in which the target firm operates. LEGAL DISTANCE is not significant, however.¹³ The latter result remains valid after dropping TARGET CIVIL, CULTURAL DISTANCE, or CROSS-BORDER from the model or after running the logistic regressions on the subsample of cross-border transactions only (not reported). Nevertheless, we do find evidence that knowledge about target-country institutions especially matters when financiers invest in a foreign country for the first time (not reported). Moreover, results show that the influence of LEGAL DISTANCE and CULTURAL DISTANCE on the incidence of syndication is positive and significant when financiers lack knowledge about the country of the target firm, measured by (1) the fraction of deals executed in the target-firm country, calculated over a two-year moving window, (2) the natural logarithm of the amount of funds invested in the same country as that of the target firm in the two years before the buyout, and (3) the natural logarithm of the number of times the lead financier invested in the same country as the target company, calculated over a two-year moving window (not reported).

Regarding the control variables, we find a positive and significant coefficient on CROSS-BORDER, suggesting that lead financiers syndicate more frequently for cross-border deals.¹⁴ Finally, a higher level of competition for target firms (COMPETITION) increases the incidence of syndication. Hence, investors may syndicate to overcome rising deal values, as syndication reduces the number of

¹³ We recognize that the influence of LEGAL DISTANCE and CULTURAL DISTANCE on the dependent variables could be underestimated. First, non-European buyout investors (11.14% of the original sample) have been removed from the sample, due to missing accounting data. Second, buyout investors may hire local investment executives to obtain target-country information. Yet, we have no information on the nationalities and education levels of executives in this study.

¹⁴ In 77.94% of cross-border syndicates, indigenous participant investors are invited.

candidates for a single target firm. As a sensitivity check, we use the one-year lagged number of IPOs in Europe. The reason is that a positive correlation exists between this measure and funds available for investment purposes, which in turn creates competition for target firms (Black and Gilson, 1998). Similar results are obtained when these competition variables are calculated at the national level (not reported).

Finally, column 8 presents the results from the base model including the inverse Mills ratio (LAMBDA) to account for a possible self-selection bias. The reason is that the experience of the lead investor might cause non-randomness in the investor-target match (McCahery and Schwienbacher, 2010). Experienced investors are better capable of deciding whether a particular target firm is suited for a buyout or not. Experience could thus influence not only the incidence of syndication, but also the incidence of a buyout. We implement a Heckman (1979) correction to deal with this potential bias. Hence, we run a logistic regression model to explain the incidence of a buyout using data on European buyout-backed and non-buyout-backed firms,¹⁵ from which we calculate the inverse Mills ratio.¹⁶ Table 7 shows the results from this first-stage logistic regression. Next, the inverse Mills ratio is added as an explanatory variable in the logistic regressions on the incidence of syndication. LAMBDA is significantly positive, although the parameter estimates and significance levels of other variables are

¹⁵ To implement the first step, we follow Officer *et al.* (2010) and apply a matched-pair sampling design. Hence, for each European buyout-backed target company, we randomly select a non-buyout-backed firm from the same four-digit SIC industry from Amadeus. When no control units can be found at the four-digit SIC level, we match at the three-digit and two-digit SIC level, respectively. When multiple firms match with the buyout-backed target firm, we randomly select a control firm. If no matching firm could be found, we omit the deal from the sample. We decided to match only at the industry level, as matching by means of additional criteria could induce problems as these variables may be important forces underlying the buyout or syndication decision. The variables for both buyout-backed and control firms are calculated one year before the transaction. Similar results are obtained when probit regressions are executed for the first stage.

¹⁶ To fulfil the exclusion restriction, we select several instrumental variables bearing an influence on the buyout decision. For this purpose, we use the results obtained by Le Nadrant and Perdreau (2006), who are, to the best of our knowledge, the only scholars who have investigated the characteristics of European buyout candidates. Yet, investigating all determinants of buyout candidates is outside the scope of this article. We use (1) the ratio of financial assets to total assets, (2) the ratio of tangible assets to total assets, (3) the ratio of total debt to total assets, (4) the ratio of EBITDA to total assets, (5) the natural logarithm of firm age, (6) the ratio of income tax to EBITDA, and (7) the standard deviation of the ratio of EBITDA to total assets over the previous three years. We estimate all models using a two-stage estimator with limited information maximum likelihood (LIML) in the second step. As a sensitivity check, we also use the full information maximum likelihood (FIML) estimator, where the selection and structural equations are estimated simultaneously, as the two-step estimator can lead to heteroscedastic standard errors. In addition, we calculate bootstrapped standard errors for all regression models, as the errors of the selection equation, structural equation, or both can be heteroscedastic. We bootstrapped as many samples as the original sample size, each again with the same number of observations, as most accurate results are obtained when re-drawing samples with the same size as the original sample. All sensitivity checks yield qualitatively similar results.

not affected. Hence, our earlier inferences and conclusions turn out to be highly robust. As a further robustness check, we run probit models examining the incidence of syndication and obtain qualitatively similar results (not reported).

 Insert Tables 6–7

V.2 Structure of the syndicate

Table 8 reports the results from Poisson regressions on the number of investors, while Table 9 shows the output from Tobit regressions on the fraction of the deal retained by the lead investor, all executed for the subsample of syndicated deals only. Except for column 2, we do not include country and year dummies. Also, we never include industry dummies, as their inclusion led to quasi-complete separation problems. Yet, convergence problems only appeared with respect to these dummy variables and did not qualitatively affect other results. Regarding target characteristics, DEAL VALUE has a positive effect on the number of investors, while a negative influence on the stake retained by the lead investor, in line with our conjectures (H1). Overall, these results once more support the idea that syndicates are used to realize portfolio diversification. Next, lead investors invite more participants for deals targeting high default-risk firms (TARGET Z-SCORE). To credibly signal their hands-on approach and thus induce participants to accept the invitation, they retain a larger fraction of the deal. In contrast, target adverse-selection problems (TARGET AGE and TARGET SALES GROWTH) negatively affect the number of investors, but have a positive effect on the stake retained by the lead investor. Likewise, lead investors invite fewer participants and retain a larger fraction for deals targeting firms that exhibit high moral-hazard risk (TARGET PPE and TARGET INTANGIBLES). Overall, we conclude that the alleviation of information and incentive problems with other syndicate member dominates when considering the role of target adverse-selection and moral-hazard problems in structuring the syndicate. Next, lead financiers invite a larger number of participants and retain a smaller fraction for deals targeting firms in

countries with a civil-law legal tradition (TARGET CIVIL). Likewise, lead financiers invite fewer participants and retain a larger stake when the target is domiciled in a country with stronger investor rights (TARGET INVESTOR RIGHTS) and law enforcement (TARGET LAW ENFORCEMENT).

Regarding investor characteristics, we find no significant evidence that large investors make different choices on the number of investors to invite and the fraction of the deal to retain, except after controlling for a potential selection bias (see further). Yet, bank subsidiaries invite a larger number of participants and retain a smaller stake, in line with the idea that these investors wish to limit investment risk. Next, lead financiers with larger buyout experience but smaller experience as a lead investor invite fewer participants and keep a larger fraction of the deal. Lastly, lead financiers invite more participants and retain a smaller fraction when having only limited knowledge about target-country institutions.

As to the control variables, CROSS-BORDER has a positive effect on the number of investors and a negative influence on the fraction of the deal retained by the lead investor. The positive effect is not always significant, however. Next, while competition for deals is not related to the number of investors in the syndicate, COMPETITION does positively affect the fraction of the deal retained by the lead investor. Hence, when syndicate members may be more concerned about competition inducing lead investors to accept lower-quality deals, lead financiers have to signal deal quality upfront by retaining a larger stake in the target firm.

Finally, column 8 reports the results from the base model including the inverse Mills ratio (LAMBDA). As syndicate structure is examined for the subsample of syndicated deals only, several reasons exist for treating the syndication decision as endogenous. First, the results in Table 6 have revealed that syndication is used to bundle funds and to finance the acquisition of large deals. Hence, smaller deals may not be included in the syndicated subsample. Besides, Table 6 has also shown that target default risk and legal risk affect the odds of syndication, which might induce another selection bias. Hence, we apply a Heckman (1979) two-step correction, calculating first the inverse Mills ratio

from the logistic regressions in Table 6.¹⁷ This variable is subsequently added as an extra regressor in the Poisson and Tobit regressions of Tables 8 and 9.¹⁸ This inverse Mills ratio (LAMBDA) is always significant, pointing out the presence of a self-selection bias. Although the parameter estimates and significance levels of most variables are somewhat affected, our earlier inferences and conclusions remain robust. The only exception is INVESTOR SIZE, which becomes significantly positively related to the number of investors and significantly negatively related to the fraction of the deal retained by the lead investor, in line with our conjectures (H6).

As a robustness check for the Poisson models, we run ordered logistic regressions given the ordinal nature of the dependent variable. We obtain similar results (not reported). Next, we execute the Poisson models for the full sample, where non-syndicated transactions obtain a value of one for NUMBER OF INVESTORS. Similar results are obtained, although p -values increase moderately (not reported). Regarding the Tobit regressions, we also execute a log-transformation $\ln(y/(1-y))$ on LEAD FRACTION and run OLS regressions, using White's (1980) technique to correct for heteroscedasticity. Qualitatively similar results are obtained, although TARGET PPE is only marginally significant (not reported). Additionally, we execute the Tobit regressions for the full sample, where non-syndicated transactions obtain a value of 100% for LEAD FRACTION. Similar results are obtained, although p -values are moderately higher.

Insert Tables 8–9

¹⁷ We opt to fulfil the exclusion restriction by including industry, country, and year dummies in the selection equation, but not in the structural equation, as we investigate the same determinants for the incidence of syndication as for the structure of the syndicate. In this way, several significant selection variables are present, while problems of quasi-complete separation in the second-stage regression can be avoided. We implement several additional robustness checks by including and excluding variables in the selection equation. Results do not qualitatively change.

¹⁸ Regarding Poisson regressions, we run the two-stage estimator with LIMF in the second step, but also run the two-stage estimator with nonlinear least squares, as Poisson models are nonlinear (Greene, 1994). As both approaches may lead to heteroscedastic standard errors, we also execute FIML estimation as a robustness check. However, as FIML is computationally burdensome due to the lack of a closed-form expression for the likelihood function, we also run the two-stage method of moments (TSM) estimator developed by Terza (1995), where the first stage is identical as in Heckman (1979) but the second stage consists of executing nonlinear WLS using the inverse Mills ratio as an additional regressor. We use Beaton-Tukey (1974) biweights for this purpose. All estimation methods yield qualitatively similar results. Regarding Tobit regressions, we run the two-stage estimator with LIMF in the second step, but also execute FIML and again obtain qualitatively similar results. Finally, we also calculate bootstrapped standard errors for the Poisson as well as the Tobit regressions, given that the errors of the selection equation, structural equation, or both can be heteroscedastic. Again, results prove robust.

VI. Additional robustness checks.

First, we acknowledge that DEAL VALUE could be endogenous, as syndication might also serve as an instrument to reduce competition among buyout investors, thereby lowering the acquisition price. We therefore use three instrumental variables for DEAL VALUE: (1) the natural logarithm of the number of target employees, (2) a dummy variable equal to one if the buyout is a public-to-private transaction, and (3) a dummy variable equal to one if the deal is a secondary buyout. These instruments are relevant as they all have a highly significant positive effect on DEAL VALUE (p -value for every instrument $<.0001$), while none of them influences the incidence of syndication. We execute Hansen's (1982) test for the validity of over-identifying restrictions and quality of instruments and cannot reject the null hypothesis that the orthogonality restrictions equal zero (J -statistic = 1.9083, p -value = 0.5916). The results from 2SLS and GMM estimations on the incidence of syndication and syndicate structure are qualitatively similar to those from the base model, although p -values are somewhat higher.

Target management may use creative accounting to improve target attractiveness, which could influence the value of some target characteristics. Therefore, in line with Le Nadrant and Perdreau (2006), we take the average value of TARGET Z-SCORE, TARGET SALES GROWTH, TARGET PPE, and TARGET INTANGIBLES over the three years before the buyout. Results prove robust.

As some financiers could opt for syndication as part of their overall portfolio strategy rather than after examining target characteristics, we also cluster all standard errors by the lead investor as a robustness check (Dimov and Milanov, 2010). We run generalized estimating equations using GLS in each step of the Newton-Raphson algorithm, where the weight matrix has non-zero off-diagonal elements that are functions of the correlations among the observations. Besides, we include dummy variables representing buyout investors that executed more than 0.5% of transactions in our sample, such as 3i, Advent International, Apax Partners, Axa Private Equity, Barclays Private Equity, Carlyle Group, CVC Capital Partners, Gilde, IK Investment Partners, LBO France, and Warburg Pincus. As a

further sensitivity check, we three-way cluster all standard errors by investor, industry, and country. We do not cluster on time, as the sample only includes ten years of data (Petersen, 2009). Although p -values increase moderately, qualitatively similar conclusions are obtained.

Next, we acknowledge that the number of investors and the fraction of the deal retained by the lead investor could be determined simultaneously. Hence, a simultaneity bias may arise when the retained fraction is explained by the number of investors, and vice versa. Executing simultaneous equations to deal with this bias might be cumbersome, as both variables are determined by the same explanatory variables. Hence, finding an instrument to fulfill the rank order condition for the 2SLS or 3SLS estimations is extremely complicated. In addition, executing simultaneous equations with OLS may result in biased and inconsistent parameter estimates, as this estimation ignores the information as to which of the explanatory variables are endogenous. McCahery and Schwienbacher (2010) propose an alternative approach to circumvent this simultaneity issue in the context of bank loan syndication. They compare the fraction actually retained by the lead arranger with the fraction a lead investor would hold if the deal is shared uniformly among N lenders. The dependent variable is then calculated as the actual fraction retained by the lead arranger divided by $1/N$. Hence, this measure corrects LEAD FRACTION for syndicate size by adjusting the dependent variable directly instead of including an extra regressor. We apply this alternative approach as a robustness check and run OLS regressions, using White's (1980) technique to correct for heteroscedasticity. Results are qualitatively similar to results from the Tobit regressions in Table 9, although p -values are moderately higher.

We also execute Tobit regressions on syndicate concentration, measured by the Herfindahl-Hirschman concentration index. The latter variable is calculated as the sum of squares of the fractions held by all investors in the syndicate. Hence, this measure summarizes the information on the number of investors as well as the fraction retained by the lead investor. Results reveal that earlier inferences and conclusions are robust, except for TARGET Z-SCORE being not significant.

Finally, we examine the effects of target and lead-investor characteristics on the incidence of syndication separately for deals involving target companies with a common-law (i.e. UK and Ireland) versus a civil-law legal tradition and find qualitatively similar results for all explanatory variables. The only exception is target default risk, which is no longer significant in the common-law subsample. When explaining the number of investors, we find qualitatively similar results for deals targeting civil-law firms, although TARGET PPE has only a marginally significant influence.¹⁹ We could not run separate subsample analyses for LEAD FRACTION, however.

Insert Table 10

VII. Conclusions

This paper empirically investigates what target and lead-investor characteristics affect the incidence and structure of buyout syndicates, using a hand-collected dataset on 868 European buyouts during 1999–2009. Regarding the incidence of syndication, we conclude that investors syndicate more often for large deals targeting firms that exhibit high default risk. In contrast, target adverse-selection and moral-hazard problems do not affect the incidence of syndication. This article also provides the novel finding that financiers syndicate more often for target firms in countries with weak legal institutions. Moreover, large investors with limited buyout experience, extensive lead experience, and lack of knowledge about target-country institutions tend to syndicate more frequently. Bank subsidiaries also syndicate more regularly. Hence, this article is the first to provide detailed evidence that the motives underlying buyout syndication are not equally important for every investor, but also depend on investor characteristics.

Regarding syndicate structure, we find that lead investors trade off the benefits and costs associated with buyout syndication. Specifically, lead investors shape less concentrated syndicates for

¹⁹ Given the small sample sizes, we were unable to execute subsample analyses with respect to the number of investors for deals targeting firms in countries with a common-law legal tradition.

large deals targeting firms in a country with a civil-law legal tradition, which allows benefiting from risk diversification. However, as syndicate concentration diminishes, the potential for conflicts of interest with other syndicate members increases, thereby putting a constraint on the lead investor's ability to further reduce syndicate concentration. Hence, when target firms exhibit potentially large adverse-selection and moral-hazard problems, lead investors shape more concentrated syndicates. The latter syndicates entail smaller free-rider problems and a faster decision making. Hence, our paper stresses that a clear distinction should be made between various types of risk, as target-country legal risk has another effect on syndicate structure than target adverse-selection or moral-hazard risk. The main explanation for this finding probably is that the legal tradition of the target country is exogenous. Hence, lead investors cannot adjust syndicate structure to alleviate incentive problems with other syndicate members to mitigate target-country legal risk, in contrast to target adverse-selection and moral-hazard problems. Next, we demonstrate that bank subsidiaries choose less concentrated syndicates, in line with the idea that they attach more importance to the risk-diversification motive. Furthermore, investors with larger buyout experience, limited lead experience, and extensive knowledge about target-country institutions invite fewer participants and retain a larger fraction of the deal.

Overall, this paper provides evidence that syndication decisions are driven by target and lead-investor characteristics that call for syndication as well as by the wish to alleviate information and incentive problems with other syndicate members, which occurs primarily through increasing syndicate concentration. Specifically, lead investors enhance monitoring incentives by shaping a more concentrated syndicate, which is potentially costly as an increased exposure to a single target firm restricts diversification opportunities. Nevertheless, the alleviation of agency problems with syndicate members might also have long-run beneficial effects for lead investors, as building a reputation for not

expropriating participant investors might allow becoming a more attractive syndicate member in the future, thereby enhancing future deal flow.

Our study has important implications for the PE industry and for policy makers. First, the European Venture Capital Association (EVCA) and national PE associations typically facilitate the interaction between their members by organizing meetings and conferences. Hence, these associations could use the results of our study to stimulate syndication and networking of their members. Specifically, our results can be used to illustrate the importance of syndication as a risk-reduction technique, a method to reduce target-investor information asymmetries, and a way to generate more future deal flow. Furthermore, the EVCA can use our results to illustrate how buyout investors can reduce the cost of syndication by shaping a more concentrated syndicate. By alleviating agency problems with other syndicate members, buyout investors build a reputation for not expropriating participant investors and become a more attractive syndicate member in the future, thereby enhancing future deal flow. In addition, the EVCA acknowledges that, although becoming increasingly more pan-European, PE funds still have to deal with about 25 national legal systems, leading to severe legal complexities and costs. Moreover, there exist no suitable legal structure for PE funds that is effective in all situations across Europe, which may reduce the attractiveness of PE for European institutional investors. Hence, our paper provides evidence that syndication may be useful to obtain knowledge about foreign target-country institutions and reduce the exposure of buyout investors to the legal risk of the country in which the target company is domiciled. Hence, syndication can mitigate these severe legal complexities and costs. In addition, this paper contributes to the wish expressed by the European Commission for a greater appreciation and understanding of the behavior and functioning of the PE industry in many member states. Furthermore, risky target companies, initially unattractive as buyout candidates, may still be able to obtain buyout funding if investors choose to syndicate. Hence, our results allow these firms to better evaluate which buyout investors to inquire for funding, leading to a

large number of buyout-backed companies. This may be beneficial for the European economy, innovation, and the creation of new jobs.

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Table 1
Dependent and explanatory variables.

This table displays all dependent and explanatory variables, their definition, and hypothesized sign on the incidence of syndication and syndicate structure.

Dependent variables	Definition			
SYNDICATION	Dummy variable that equals one if the buyout was syndicated, and zero otherwise.			
NUMBER OF INVESTORS	The sum of all investors involved in the syndicate.			
LEAD FRACTION	The fraction of the deal retained by the lead investor.			

Independent variables	Definition	SYNDICATION	Hypothesized Sign NUMBER OF INVESTORS	LEAD FRACTION
<i>Target characteristics</i>				
DEAL VALUE	The natural logarithm of the (inflation-adjusted) price paid by investors for the equity stake of the target firm.	+	+	—
TARGET Z-SCORE	$0.0656 * (\text{working capital}/\text{total assets}) + 0.0326 * (\text{retained earnings}/\text{total assets}) + 0.0672 * (\text{EBITDA}/\text{total assets}) + 0.0105 * (\text{book value of equity}/\text{total debt})$.	—	+/-	+/-
TARGET AGE	The natural logarithm of target age.	—	+/-	+/-
TARGET SALES GROWTH	The one-year lagged sales growth rate.	+	+/-	+/-
TARGET PPE	The ratio of property, plant, and equipment to total assets.	—	+/-	+/-
TARGET INTANGIBLES	The ratio of intangible assets to total assets.	+	+/-	+/-
TARGET CIVIL	Dummy variable that equals one if the target is domiciled in a civil-law country, and zero otherwise.	+	+	—
TARGET INVESTOR RIGHTS	Investor rights index for the country of the target firm, defined by Berkowitz <i>et al.</i> (2003).	—	—	+
TARGET LAW ENFORCEMENT	Law enforcement index for the country of the target firm, defined by Leuz <i>et al.</i> (2003).	—	—	+
<i>Lead-investor characteristics</i>				
INVESTOR SIZE	The natural logarithm of the number of employees.	+	+	—
BANK SUBSIDIARY	Dummy variable that equals one if the lead financier is a bank subsidiary, and zero otherwise.	+	+	—
BUYOUT EXPERIENCE	The natural logarithm of the number of previous buyout transactions executed as a single investor or as a lead investor in a syndicate.	—	—	+
LEAD EXPERIENCE	The percentage of buyout transactions the lead financier has syndicated.	+	+	—
LEGAL DISTANCE	Dummy variable that equals one if the lead financier and the target firm are domiciled in countries with different legal characteristics (common-law compared to civil-law), and zero otherwise.	+	+	—
CULTURAL DISTANCE	The Euclidean distance between the Hofstede (1980) indices, namely power distance, individualism, uncertainty avoidance, and masculinity of the country of the target firm and that of the lead investor.	+	+	—
<i>Control variables</i>				
CROSS-BORDER	Dummy variable that equals one if the target firm and the lead financier are domiciled in a different country, and zero otherwise.	+/-	+/-	+/-
COMPETITION	The ratio of total funds raised minus total funds invested in the buyout market divided by total funds invested.	+/-	+/-	+/-
LAMBDA	The inverse Mills ratio (Heckman, 1979)	+/-	+/-	+/-

Table 2

Syndication, time, industry, and geographical distribution of the sample.

This table displays the absolute and percentage distribution of syndication, transaction year, target industry, and target country during 1999–2009 for the full and syndicate sample before and after listwise deletion.

	Full sample (Raw data)	Full sample (Retained data)	Syndicated sample (Raw data)	Syndicated sample (Retained data)
Syndication				
Syndicated transactions	371(14.70 %)	148 (17.05 %)		
Non-syndicated transactions	2,152 (85.30 %)	720 (82.95 %)		
Transaction year				
1999	143 (5.67 %)	41 (4.72 %)	35 (9.41 %)	14 (9.46 %)
2000	132 (5.23 %)	40 (4.61 %)	22 (5.91 %)	5 (3.38 %)
2001	106 (4.20 %)	39 (4.49 %)	24 (6.45 %)	14 (9.46 %)
2002	116 (4.60 %)	41 (4.72 %)	17 (4.57 %)	6 (4.05 %)
2003	159 (6.30 %)	58 (6.68 %)	26 (6.99 %)	8 (5.41 %)
2004	246 (9.75 %)	99 (11.29 %)	31 (8.33 %)	13 (8.78 %)
2005	352 (13.95 %)	129 (14.86 %)	35 (9.41 %)	15 (10.14 %)
2006	423 (16.77 %)	149 (17.17 %)	73 (19.62 %)	31 (20.95 %)
2007	420 (16.65 %)	162 (18.66 %)	52 (13.98 %)	21 (14.19 %)
2008	315 (12.49 %)	101 (11.64 %)	44 (11.83 %)	18 (12.16 %)
2009	111 (4, 40 %)	10 (1.15 %)	13(3.49 %)	3(2.03 %)
Target industry				
SIC 0 – Agriculture	6 (0.24 %)	2 (0.23 %)	1 (0.27 %)	1 (0.68 %)
SIC 1 – Mining	60 (2.38 %)	26 (3.00 %)	8 (2.16 %)	2 (1.35 %)
SIC 2 – Food	500 (19.83 %)	163 (18.78 %)	75 (20.22 %)	26 (17.57 %)
SIC 3 – Manufacturing	760 (30.13 %)	252 (29.03 %)	103 (27.76 %)	40 (27.03 %)
SIC 4 – Transportation	232 (9.20 %)	77 (8.87 %)	46 (12.40 %)	17 (11.49 %)
SIC 5 – Wholesale	342 (13.56 %)	136 (15.67 %)	58 (15.63 %)	25 (16.89 %)
SIC 7 – Personal and business services	422 (16.73 %)	136 (15.67 %)	58 (15.63 %)	25 (16.89 %)
SIC 8 – Health, legal, social services	198 (7.85 %)	75 (8.64 %)	21 (5.67 %)	12 (8.11 %)
SIC 9 – Administration	2 (0.08 %)	1 (0.01 %)	1 (0.27 %)	0 (0.00%)
Target country				
Austria(German civil-law)	52 (2.06 %)	5 (0.58 %)	8 (2.15 %)	1 (0.68 %)
Belgium(French civil-law)	77 (3.05 %)	33 (3.80 %)	23 (6.18 %)	11 (7.43 %)
Bulgaria(German civil-law)	11 (0.44 %)	4 (0.46 %)	0 (0.00 %)	0 (0.00 %)
Croatia(German civil-law)	2 (0.08 %)	1 (0.12 %)	0 (0.00 %)	0 (0.00%)
Czech Republic(German civil-law)	42 (1.66 %)	11 (1.27 %)	3 (0.81 %)	0 (0.00 %)
Denmark(Scandinavian civil-law)	96 (3.80 %)	28 (3.23 %)	12 (3.23 %)	3 (2.03 %)
Finland(Scandinavian civil-law)	109 (4.32 %)	53 (6.11 %)	11 (2.96 %)	5 (3.38 %)
France(French civil-law)	484 (19.18 %)	243 (28.00 %)	106 (28.49 %)	58 (39.19 %)
Germany(German civil-law)	424 (16.81 %)	87 (10.02 %)	46 (12.37 %)	8 (5.41 %)
Greece(French civil-law)	6 (0.24 %)	4 (0.46 %)	2 (0.54 %)	2 (1.35 %)
Hungary(German civil-law)	6 (0.24 %)	2 (0.23 %)	0 (0.00 %)	0 (0.00 %)
Ireland(Common-law)	17 (0.67 %)	1 (0.12 %)	0 (0.00 %)	0 (0.00%)
Italy (French civil-law)	199 (7.89 %)	71 (8.18 %)	33 (8.87 %)	10 (6.76 %)
Luxemburg(French civil-law)	12 (0.48 %)	1(0.12 %)	1 (0.27 %)	0 (0.00%)
The Netherlands(French civil-law)	194 (7.69 %)	44 (5.07 %)	25 (6.72 %)	7 (4.73 %)
Norway(Scandinavian civil-law)	37(1.47 %)	21 (2.42 %)	4 (1.08 %)	3 (2.03 %)
Portugal(French civil-law)	27 (1.07 %)	15 (1.73 %)	3 (0.81 %)	2 (1.35 %)
Russian Republic(Socialist civil-law)	41 (1.63 %)	0(0.00 %)	0 (0.00 %)	0 (0.00%)
Slovakia(German civil-law)	9 (0.36 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00%)
Slovenia(German civil-law)	2 (0.08 %)	0 (0.00 %)	0 (0.00%)	0 (0.00%)
Spain(French civil-law)	161 (6.38 %)	85 (9.79 %)	43 (11.56 %)	22 (14.86 %)
Switzerland(German civil-law)	61 (2.42 %)	2 (0.23 %)	8 (2.15 %)	0 (0.00%)
Ukraine(Socialist civil-law)	6 (0.24 %)	0 (0.00 %)	2 (0.54 %)	0 (0.00%)
United Kingdom(Common-law)	448 (17.76 %)	157 (18.09 %)	42 (11.29 %)	15 (10.14 %)
Total	2,523	868	371	148

Table 3
Summary statistics.

This table reports summary statistics on the dependent and explanatory variables. All explanatory variables are measured at the end of the fiscal year prior to the transaction and are winsorized at 5%-95% to remove extreme values in either tail of the distribution. Descriptive statistics on SYNDICATION and all explanatory variables are calculated for the full sample of European buyouts during 1999–2009, whereas summary statistics on NUMBER OF INVESTORS and LEAD FRACTION can be computed for the syndicated subsample only. A definition of all variables and hypothesized sign on the dependent variables is presented in Table 1. Summary statistics are presented before any logarithmic transformation of the data to facilitate interpretation.

Variable	Mean	Median	25 th pctl	75 th pctl	Minimum	Maximum	Std Dev
Dependent variables							
SYNDICATION	0.1705	0.0000	0.0000	0.0000	0.0000	1.0000	0.3534
NUMBER OF INVESTORS	2.3898	2.0000	2.0000	3.0000	2.0000	8.0000	0.7881
LEAD FRACTION	0.5953	0.5696	0.5000	0.7500	0.1221	0.9900	0.1887
Independent variables							
<i>Target characteristics</i>							
DEAL VALUE	156,449,749	30,835,000	9,390,837	452,741,339	229,562	1,708,305,290	317,905,978
TARGET Z-SCORE	1.4433	1.3598	0.8100	1.9102	0.1384	3.3375	0.8405
TARGET AGE	19.0599	13.0000	6.0000	25.0000	1.0000	72.0000	19.1153
TARGET SALES GROWTH	0.1416	0.0844	-0.0166	0.2297	-0.3332	0.9948	0.2956
TARGET PPE	0.2007	0.1356	0.0374	0.3100	0.0000	0.6739	0.1963
TARGET INTANGIBLES	0.0706	0.0097	0.0000	0.0802	0.0000	0.4100	0.1181
TARGET CIVIL	0.8179	1.0000	0.0000	1.0000	0.0000	1.0000	0.4000
TARGET FRENCH CIVIL	0.5715	1.0000	0.0000	0.0000	0.0000	1.0000	0.4988
TARGET GERMAN CIVIL	0.1233	0.0000	0.0000	0.0000	0.0000	1.0000	0.4272
TARGET SCAND CIVIL	0.1176	0.0000	0.0000	0.0000	0.0000	1.0000	0.2948
TARGET INVESTOR RIGHTS	19.9997	20.4081	19.6681	20.7590	14.9086	21.9154	1.4288
TARGET LAW ENFORCEMENT	8.9078	9.1000	8.7000	9.4000	6.8000	10.0000	0.9121
<i>Lead-investor characteristics</i>							
INVESTOR SIZE	91.5279	22.0000	11.0000	160.0000	3.0000	786.0000	195.2930
INVESTOR TYPE							
BANK SUBSIDIARY	0.2052	0.0000	0.0000	0.0000	0.0000	1.0000	0.4036
CORPORATE SUBSIDIARY	0.0213	0.0000	0.0000	0.0000	0.0000	1.0000	0.1446
INSURANCE SUBSIDIARY	0.0348	0.0000	0.0000	0.0000	0.0000	1.0000	0.1833
GOVERNMENT AGENCY	0.0067	0.0000	0.0000	0.0000	0.0000	1.0000	0.0817
INDEPENDENT	0.7320	1.0000	0.0000	0.0000	0.0000	1.0000	0.4446
BUYOUT EXPERIENCE	3.6940	2.0000	1.0000	5.0000	0.0000	14.0000	3.5652
LEAD EXPERIENCE	0.0571	0.0000	0.0000	0.0000	0.0000	0.5000	0.1328
LEGAL DISTANCE	0.1951	0.0000	0.0000	0.0000	0.0000	1.0000	0.3964
CULTURAL DISTANCE	4.8496	0.0000	0.0000	4.0000	0.0000	33.000	9.7712
INDSPECIALIZATION	0.0363	0.0000	0.0000	0.0000	0.0000	0.4000	0.1030

Table 4
Univariate tests.

Panel A displays the mean and median of all continuous explanatory variables for syndicated and non-syndicated European buyout transactions, together with the parametric *t*-test and non-parametric Wilcoxon rank-sum test, using the full sample of European buyout transactions during 1999–2009. Panel B displays the mean and median of all continuous explanatory variables for dyads and non-dyads, together with the parametric *t*-test and non-parametric Wilcoxon rank-sum test, using the syndicated sample of buyout syndicates. A definition of all variables and hypothesized sign on the incidence of syndication and syndicate structure is presented in Table 1. All explanatory variables are measured at the end of the fiscal year prior to the transaction and are winsorized at 5%-95% to remove extreme values in either tail of the distribution.

Panel A: Test of significance of differences between syndicated and non-syndicated transactions.

Variable	SYNDICATION		NO SYNDICATION		<i>p</i> -value for difference	
	Mean	Median	Mean	Median	Parametric <i>t</i> -test	Wilcoxon rank-sum test
<i>Target characteristics</i>						
DEAL VALUE	10.7517	10.7144	10.3728	10.2472	0.0022	0.0093
TARGET Z-SCORE	1.2888	1.2114	1.4684	1.3885	0.0037	0.0059
TARGET AGE	2.4446	2.6391	2.3960	2.4849	0.4643	0.2570
TARGET SALES GROWTH	0.1605	0.0921	0.1381	0.0838	0.2949	0.1734
TARGET PPE	0.2078	0.1583	0.1995	0.1341	0.5301	0.3325
TARGET INTANGIBLES	0.0834	0.0198	0.0682	0.0083	0.0587	0.0018
TARGET INVESTOR RIGHTS	19.7084	19.6681	20.0500	20.4081	<.0001	<.0001
TARGET LAW ENFORCEMENT	8.7251	8.7000	8.9408	9.1000	<.0001	<.0001
<i>Lead-investor characteristics</i>						
INVESTOR SIZE	3.4710	3.2189	3.3031	3.0678	0.0730	0.0763
BUYOUT EXPERIENCE	0.8838	0.6931	0.9290	0.6931	0.3459	0.2689
LEAD EXPERIENCE	0.2200	0.0000	0.1676	0.0000	0.0081	0.0074
CULTURAL DISTANCE	5.5730	0.0000	4.7236	0.0000	0.1560	0.8415

Panel B: Test of significance of differences between dyad and non-dyads.

Variable	DYAD		NO DYAD		<i>p</i> -value for difference	
	Mean	Median	Mean	Median	Parametric <i>t</i> -test	Wilcoxon rank-sum test
<i>Target characteristics</i>						
DEAL VALUE	10.9655	10.9738	11.4824	11.3816	0.0312	0.0543
TARGET Z-SCORE	1.2804	1.1662	0.9118	1.0244	<.0001	0.0004
TARGET AGE	2.7610	2.8904	3.0214	2.8904	0.0303	0.0810
TARGET SALES GROWTH	0.2271	0.1174	0.1338	0.0796	0.0566	0.0884
TARGET PPE	0.2097	0.1631	0.2075	0.1443	0.9272	0.7119
TARGET INTANGIBLES	0.0927	0.0190	0.0557	0.0153	0.0160	0.0842
TARGET INVESTOR RIGHTS	19.4460	19.6681	18.7678	19.6681	0.0005	0.0024
TARGET LAW ENFORCEMENT	8.5603	8.7000	8.1182	8.7000	0.0004	0.0004
<i>Lead-investor characteristics</i>						
INVESTOR SIZE	3.3589	3.2385	3.4932	3.1355	0.5786	0.7251
BUYOUT EXPERIENCE	0.9709	0.6931	0.9349	0.6931	0.7480	0.3844
LEAD EXPERIENCE	0.2151	0.0000	0.3738	0.0000	0.0023	0.0046
CULTURAL DISTANCE	5.0657	0.0000	8.2208	0.0000	0.0525	0.0595

Table 5
Correlation matrix.

This table presents pairwise correlations among the continuous variables. Panel A displays correlations on the full sample of European buyout transactions, while Panel B shows correlations on the syndicated subsample. A definition of all independent variables and hypothesized sign on the incidence of syndication and syndicate structure is presented in Table 1. All explanatory variables are measured at the end of the fiscal year prior to the transaction and are winsorized at 5%-95% to remove extreme values in either tail of the distribution. ***, ** and * indicate significance levels of 1%, 5% and 10%, respectively. Correlations larger than 0.70 in absolute value are indicated in bold.

1. DEAL VALUE
2. TARGET Z-SCORE
3. TARGET AGE
4. TARGET SALES GROWTH
5. TARGET PPE
6. TARGET INTANGIBLES

7. TARGET INVESTOR RIGHTS
8. TARGET LAW ENFORCEMENT
9. INVESTOR SIZE
10. BUYOUT EXPERIENCE
11. LEAD EXPERIENCE
12. CULTURAL DISTANCE

13. NUMBER OF INVESTORS
14. LEAD FRACTION

Panel A: Pairwise correlations on the full sample of European buyout transactions.

	1	2	3	4	5	6	7	8	9	10	11	12
1	1.00											
2	-0.28***	1.00										
3	0.17***	0.06**	1.00									
4	-0.05*	0.04	-0.19***	1.00								
5	0.15***	-0.05***	0.08***	-0.03	1.00							
6	0.21***	-0.16***	-0.26***	0.11***	-0.09***	1.00						
7	-0.02	0.19***	-0.03*	0.02	0.09***	-0.05**	1.00					
8	-0.03	0.19***	-0.04*	0.02	0.09***	-0.05**	0.99***	1.00				
9	0.20***	-0.06*	0.00	-0.04	0.04	0.04	0.02	0.02	1.00			
10	0.12***	0.04	0.01	0.01	-0.03	0.02	-0.00	-0.00	0.46***	1.00		
11	0.07***	0.05*	0.02	-0.00	-0.04	0.02	-0.00	-0.00	0.10***	0.31***	1.00	
12	0.12***	-0.11***	0.01	0.03	-0.03	-0.01	-0.11***	-0.11***	0.17***	0.12***	0.06***	1.00

Panel B: pairwise correlations on the syndicated sample.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1.00													
2	-0.31***	1.00												
3	0.18***	0.09	1.00											
4	-0.07	0.05	-0.17**	1.00										
5	0.20***	-0.08	0.15**	-0.07	1.00									
6	0.09	-0.19***	-0.38***	0.13*	-0.11*	1.00								
7	-0.07	0.21***	0.03	0.08	0.06	-0.15**	1.00							
8	-0.08	0.21***	0.04	0.08	0.07	-0.02**	0.99***	1.00						
9	0.13*	-0.10	-0.03	-0.16**	0.01	0.04	0.02	0.03	1.00					
10	0.00	0.02	0.05	-0.03	-0.03	-0.03	-0.00	-0.00	0.45***	1.00				
11	-0.01	0.03	0.01	-0.07	-0.02	-0.03	-0.04	-0.04	0.11*	0.28***	1.00			
12	0.06	-0.02	-0.04	0.03	-0.08	0.01	-0.00	-0.00	0.22***	0.26***	0.03	1.00		
13	0.17***	-0.16**	0.08*	0.18**	0.09*	-0.00	-0.12**	-0.12**	0.02	-0.02	0.06*	0.06*	1.00	
14	-0.15*	0.19*	-0.01*	0.01	-0.06*	0.10*	0.08*	0.08*	0.20**	0.24***	-0.05*	0.12**	-0.45***	1.00

Table 6
Determinants of the incidence of syndication

This table displays the results from logistic regressions on the incidence of syndication for the full sample of European buyout transactions. SYNDICATION is the dependent variable. A definition of all variables and hypothesized sign on the incidence of syndication is presented in Table 1. All explanatory variables are measured at the end of the fiscal year prior to the transaction and are winsorized at 5%-95% to remove extreme values in either tail of the distribution. Coefficients significant at the 10%, 5%, and 1% level are respectively marked with *, **, and ***. *p*-values are reported between parentheses.

	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept		-4.3869*** (<.0001)	-7.0059*** (<.0001)	-6.9928*** (<.0001)	-7.3158*** (<.0001)	-7.0887*** (<.0001)	-2.9700* (0.0527)	-4.1849*** (0.0033)	-9.2699*** (<.0001)
<i>Target characteristics</i>									
DEAL VALUE	+	0.1695*** (<.0001)	0.1579*** (<.0001)	0.1332*** (0.0004)	0.1624*** (<.0001)	0.1576*** (<.0001)	0.1287*** (0.0005)	0.1515*** (<.0001)	0.2158*** (<.0001)
TARGET Z-SCORE	-	-0.1738** (0.0204)	-0.1805** (0.0166)	-0.1740** (0.0225)	-0.1144** (0.0347)	-0.1127** (0.0122)	-0.1910** (0.0149)	-0.1259* (0.0964)	-0.2797*** (0.0006)
TARGET AGE	-	0.0310 (0.5403)	0.0005 (0.9928)		0.0086 (0.8249)	0.0270 (0.3774)	0.0192 (0.7101)	0.0136 (0.7904)	0.1464 (0.2154)
TARGET SALES GROWTH	+			0.0945 (0.6369)					
TARGET PPE	-	0.3975 (0.1838)	0.1461 (0.6441)	0.4020 (0.1965)		0.1813 (0.3298)	0.2148 (0.4987)	0.0996 (0.7499)	0.4351 (0.1946)
TARGET INTANGIBLES	+				0.3738 (0.3085)				
TARGET CIVIL	+	0.7594*** (<.0001)	0.9355*** (<.0001)	0.9334*** (<.0001)	0.9361*** (<.0001)				0.9757*** (<.0001)
TARGET FRENCH CIVIL	+					1.1665*** (<.0001)			
TARGET GERMAN CIVIL	+					0.5573*** (<.0001)			
TARGET SCAND CIVIL	+					0.6822*** (<.0001)			
TARGET INVESTOR RIGHTS	-						-0.1303*** (0.0014)		
TARGET LAW ENFORCEMENT	-							-0.2005*** (0.0021)	
<i>Lead-investor characteristics</i>									
INVESTOR SIZE	+	0.0782 (0.1107)	0.1306*** (0.0079)	0.1019** (0.0424)	0.1062*** (0.0033)	0.1293*** (<.0001)	0.0602 (0.2138)	0.0028** (0.0451)	0.1047* (0.0605)
BANK SUBSIDIARY	+	0.4984*** (<.0001)	0.5007*** (<.0001)	0.4994*** (<.0001)	0.4646*** (<.0001)	0.4526*** (<.0001)	0.4489*** (0.0005)	0.4785*** (0.0002)	0.4509*** (0.0020)
BUYOUT EXPERIENCE	-	-0.2176*** (0.0057)	-0.2758*** (0.0007)	-0.2452*** (0.0028)	-0.2535*** (<.0001)	-0.2908*** (<.0001)	-0.2289*** (0.0048)	-0.2069** (0.0113)	-0.3312*** (0.0004)
LEAD EXPERIENCE	+	0.8731** (0.0360)	0.6990 (0.1051)	0.7039 (0.1020)	0.6561** (0.0307)	0.6567*** (0.0088)	0.8615** (0.0447)	0.8153* (0.0560)	1.0110** (0.0394)
LEGAL DISTANCE	+	0.1612 (0.4390)	0.1943 (0.3695)	0.1856 (0.3916)	0.1432 (0.3455)	0.1357 (0.2823)	0.3165 (0.1366)	0.2904 (0.1713)	0.2198 (0.3678)
CULTURAL DISTANCE	+	0.0142* (0.0595)	0.0127 (0.1058)	0.0139* (0.0750)	0.0137** (0.0134)	0.0047 (0.1142)	0.0141* (0.0772)	0.0147* (0.0642)	0.0157* (0.0763)
<i>Control variables</i>									
CROSS-BORDER	+/-	0.6415*** (0.0020)	0.7236*** (0.0008)	0.6954*** (0.0011)	0.7060*** (<.0001)	0.5203*** (<.0001)	0.6594*** (0.0021)	0.6593*** (0.0018)	0.7912*** (0.0010)
COMPETITION	+/-	4.3965*** (0.0047)	5.1764*** (0.0097)	5.7938*** (0.0036)	5.6416*** (<.0001)	5.6038*** (<.0001)	4.2589** (0.0315)	4.6114** (0.0200)	5.9242** (0.0116)
LAMBDA	+/-								1.1344*** (<.0001)
Industry dummies		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country dummies		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nagelkerke R-square		0.1810	0.2050	0.1991	0.2047	0.2198	0.1886	0.1881	0.2843

Table 7**Determinants of the buyout decision (first-stage regression).**

This table displays the results from the first-stage logistic regression on buyout incidence. The dependent variable is BUYOUT, which is a dummy variable that equals one if a buyout occurred, and zero otherwise. All explanatory variables are measured at the end of the fiscal year prior to the transaction and winsorized at 5%–95% to remove extreme values in either tail of the distribution. Coefficients significant at the 10%, 5%, and 1% level are respectively marked with *, **, and ***. *p*-values are reported between parentheses.

Variable	Pred. sign	(1) Full sample
Intercept		-11.3929*** (<.0001)
FINANCIAL ASSETS/TOTAL ASSETS	+	8.0155*** (<.0001)
TANGIBLE ASSETS /TOTAL ASSETS	+	0.5660 (0.1129)
TOTAL DEBT/TOTAL ASSETS	—	-0.6691* (0.0876)
EBITDA/TOTAL ASSETS	+	5.3868*** (<.0001)
LN(AGE)	+	3.0328*** (<.0001)
INCOME TAX/TOTAL ASSETS	+	26.3416*** (<.0001)
STDEV 3 YEARS (EBITDA/TA)	—	-9.1616*** (<.0001)
Industry dummies		Yes
Year dummies		Yes
Nagelkerke R-square		0.4951

Table 8
Determinants of the number of investors.

This table displays the results from Poisson regressions on the number of investors for the sample of syndicated European buyout transactions. NUMBER OF INVESTORS is the dependent variable. A definition of all variables and hypothesized sign on the number of investors is presented in Table 1. All explanatory variables are measured at the end of the fiscal year prior to the transaction and are winsorized at 5%–95% to remove extreme values in either tail of the distribution. Coefficients significant at the 10%, 5%, and 1% level are respectively marked with *, **, and ***. *p*-values are reported between parentheses.

	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept		0.6684*** (<.0001)	0.6995*** (<.0001)	0.6997*** (0.0003)	0.7239*** (0.0002)	0.7210*** (0.0002)	0.1392*** (<.0001)	1.2758*** (<.0001)	0.3384*** (<.0001)
<i>Target characteristics</i>									
DEAL VALUE	+	0.0118** (0.0107)	0.0096 (0.1478)	0.0128** (0.0164)	0.0115** (0.0308)	0.0107** (0.0478)	0.0093* (0.0710)	0.0088** (0.0476)	0.0352*** (<.0001)
TARGET Z-SCORE	+/-	-0.0217** (0.0353)	-0.0297* (0.0535)	-0.0198 (0.1028)	-0.0331*** (0.0055)	-0.0218* (0.0830)	-0.0182 (0.1392)	-0.0203* (0.0571)	-0.0468*** (<.0001)
TARGET AGE	+/-	0.0194*** (0.0031)	0.0219** (0.0191)		0.0283*** (0.0008)	0.0177** (0.0214)	0.0232*** (0.0022)	0.0224*** (0.0005)	0.0415*** (<.0001)
TARGET SALES GROWTH	+/-			-0.1397*** (<.0001)					
TARGET PPE	+/-	0.1371*** (0.0008)	0.0742 (0.1925)	0.1154** (0.0136)		0.1071** (0.0263)	0.0899* (0.0590)	0.0803* (0.0585)	0.0366* (0.0726)
TARGET INTANGIBLES	+/-				-0.0203 (0.1973)				
TARGET CIVIL	+	0.0611** (0.0201)	0.0635* (0.0970)	0.0569* (0.0661)	0.0507* (0.0954)				0.0696*** (<.0001)
TARGET FRENCH CIVIL	+					0.0668** (0.0346)			
TARGET GERMAN CIVIL	+					0.0008 (0.2828)			
TARGET SCAND CIVIL	+					0.0529 (0.2258)			
TARGET INVESTOR RIGHTS	-						-0.0263*** (<.0001)		
TARGET LAW ENFORCEMENT	-							-0.0416*** (<.0001)	
<i>Lead-investor characteristics</i>									
INVESTOR SIZE	+	0.0102 (0.1036)	0.0122 (0.1772)	0.0122 (0.1036)	0.0131* (0.0719)	0.0078 (0.2684)	0.0120 (0.1070)	0.0051 (0.4188)	0.0164*** (<.0001)
BANK SUBSIDIARY	+	0.0307* (0.0641)	0.0285 (0.2244)	0.0375** (0.0483)	0.0391** (0.0413)	0.0324* (0.0916)	0.0373** (0.0492)	0.0361** (0.0290)	0.0895*** (<.0001)
BUYOUT EXPERIENCE	-	-0.0224** (0.0324)	-0.0300** (0.0407)	-0.0215* (0.0769)	-0.0269** (0.0255)	-0.0262** (0.0312)	-0.0262** (0.0304)	-0.0233** (0.0263)	-0.0234*** (<.0001)
LEAD EXPERIENCE	+	0.1561*** (0.0026)	0.1611** (0.0280)	0.1729*** (0.0039)	0.1516** (0.0114)	0.1529** (0.0109)	0.1512** (0.0109)	0.1507*** (0.0035)	0.1958*** (<.0001)
LEGAL DISTANCE	+	0.1057*** (0.0003)	0.0942** (0.0240)	0.1007*** (0.0031)	0.0963*** (0.0042)	0.0910*** (0.0076)	0.1030*** (0.0019)	0.0961*** (0.0008)	0.0126* (0.0600)
CULTURAL DISTANCE	+	0.0030*** (0.0026)	0.0942** (0.0240)	0.0034*** (0.0043)	0.0025** (0.0255)	0.0024* (0.0500)	0.0029** (0.0134)	0.0030*** (0.0029)	0.0024*** (<.0001)
<i>Control variables</i>									
CROSS-BORDER	+/-	0.0350 (0.1955)	0.0218 (0.5776)	0.0104 (0.2422)	0.0391 (0.2124)	0.0480 (0.1432)	0.0540* (0.0893)	0.0495* (0.0718)	0.0617*** (<.0001)
COMPETITION	+/-	-0.0334 (0.8953)	-0.0294 (0.2797)	-0.0691 (0.8134)	-0.0743 (0.8017)	-0.0307 (0.9174)	-0.2427 (0.4064)	-0.2637 (0.2953)	-0.0116 (0.4008)
LAMBDA	+/-								0.2473*** (<.0001)
Industry dummies		No	No	No	No	No	No	No	No
Country dummies		No	Yes	No	No	No	No	No	No
Year dummies		No	Yes	No	No	No	No	No	No
Deviance		25.68	27.78	23.35	25.33	25.49	24.30	24.20	62.50

Table 9
Determinants of the fraction of the deal retained by the lead investor.

This table displays the results from Tobit regressions on the fraction of the deal retained by the lead investor for the sample of syndicated European buyout transactions. LEAD FRACTION is the dependent variable. A definition of all variables and hypothesized sign on the retained fraction is presented in Table 1. All explanatory variables are measured at the end of the fiscal year prior to the transaction and are winsorized at 5%–95% to remove extreme values in either tail of the distribution. TARGET SCAND CIVIL does not contain any observations. Coefficients significant at the 10%, 5%, and 1% level are respectively marked with *, **, and ***. *p*-values are reported between parentheses.

	Pred. sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept		0.7573*** (<.0001)	1.4983*** (<.0001)	0.7439*** (<.0001)	0.6897*** (<.0001)	0.6942*** (<.0001)	0.4299*** (<.0001)	0.5055*** (<.0001)	2.3767*** (<.0001)
<i>Target characteristics</i>									
DEAL VALUE	–	-0.0122*** (0.0004)	-0.0102*** (0.0071)	-0.0131*** (<.0001)	-0.0104** (0.0111)	-0.0113*** (0.0049)	-0.0131*** (<.0001)	-0.0134*** (<.0001)	-0.0483*** (<.0001)
TARGET Z-SCORE	+/-	-0.0080*** (0.0003)	-0.0022* (0.0942)	-0.0074*** (<.0001)	-0.0044* (0.0907)	-0.0071*** (0.0063)	-0.0117*** (<.0001)	-0.0114*** (<.0001)	-0.0083* (0.0741)
TARGET AGE	+/-	-0.0097* (0.0681)	-0.0208*** (0.0004)		-0.0111 (0.1212)	-0.0118* (0.0626)	-0.0094* (0.0678)	-0.0088* (0.0932)	-0.0486*** (0.0074)
TARGET SALES GROWTH	+/-			0.0001 (0.8686)					
TARGET PPE	+/-	-0.0559* (0.0542)	-0.0668* (0.0550)	-0.0324 (0.1835)		-0.0525 (0.1198)	-0.0583** (0.0494)	-0.0652** (0.0265)	-0.0600* (0.0987)
TARGET INTANGIBLES	+/-				0.1114* (0.0584)				
TARGET CIVIL	–	-0.1071*** (<.0001)	-0.1271*** (<.0001)	-0.1162*** (<.0001)	-0.1106*** (<.0001)				-0.2993*** (<.0001)
TARGET FRENCH CIVIL	–					-0.0579*** (0.0092)			
TARGET GERMAN CIVIL	–					-0.0526* (0.0530)			
TARGET SCAND CIVIL	–								
TARGET INVESTOR RIGHTS	+						0.0128*** 0.0001		
TARGET LAW ENFORCEMENT	+							0.0220*** (<.0001)	
<i>Lead-investor characteristics</i>									
INVESTOR SIZE	–	0.0042 (0.3254)	0.0035 (0.4754)	0.0063 (0.1879)	0.0064 (0.2082)	0.0059 (0.2556)	0.0066 (0.1197)	0.0046 (0.2695)	-0.0937*** (0.0001)
BANK SUBSIDIARY	–	-0.0364*** (0.0014)	-0.0332** (0.0139)	-0.0437*** (<.0001)	-0.0425*** (0.0016)	-0.0385*** (0.0053)	-0.0451*** (<.0001)	-0.0434*** (0.0001)	-0.1377*** (0.0001)
BUYOUT EXPERIENCE	+	0.0389*** (<.0001)	0.0374*** (<.0001)	0.0364*** (<.0001)	0.0364*** (<.0001)	0.0398*** (<.0001)	0.0464*** (<.0001)	0.0456*** (<.0001)	0.0284 (0.1523)
LEAD EXPERIENCE	–	-0.1497*** (<.0001)	-0.1706*** (<.0001)	-0.1426*** (<.0001)	-0.1411*** (0.0005)	-0.1458*** (0.0003)	-0.1393*** (<.0001)	-0.1459*** (<.0001)	-0.4690*** (<.0001)
LEGAL DISTANCE	–	-0.0338* (0.0952)	-0.0571** (0.0150)	-0.0317* (0.0607)	-0.0322 (0.1690)	-0.0347 (0.1552)	-0.0199 (0.1090)	-0.0344* (0.0804)	-0.2192*** (0.0003)
CULTURAL DISTANCE	–	-0.0020*** (0.0087)	-0.0021** (0.0215)	-0.0021*** (0.0017)	-0.0025*** (0.0069)	-0.0019** (0.0383)	-0.0013* (0.0766)	-0.0009 (0.2247)	-0.0032 (0.1336)
<i>Control variables</i>									
CROSS-BORDER	+/-	-0.0491** (0.0115)	-0.0539** (0.0159)	-0.0527*** (0.0012)	-0.0627*** (0.0060)	-0.0504** (0.0398)	-0.0405** (0.0306)	-0.0337* (0.0744)	-0.1815*** (0.0005)
COMPETITION	+/-	0.0412*** (0.0025)	1.2213*** (<.0001)	0.0342*** (0.0025)	0.0449*** (0.0051)	0.0409** (0.0117)	0.0419*** (0.0020)	0.0425*** (0.0017)	0.0427** (0.0468)
LAMBDA	+/-								0.0467*** (<.0001)
Industry dummies		No	No	No	No	No	No	No	No
Country dummies		No	Yes	No	No	No	No	No	No
Year dummies		No	Yes	No	No	No	No	No	No
Adjusted R-square		0.1919	0.3191	0.2141	0.2540	0.1664	0.2284	0.2330	0.6090