The Economics of LBOs: Evidence from the Syndicated Loan Market

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ABSTRACT

This paper surveys extant literature on Leveraged Buy-Outs (LBOs). In addition to describing the economic motivation for the use of LBOs, this paper provides details on LBO characteristics and players, it presents the recent trends of the market, and provides statistics in relation to syndicated loans extended to LBOs worldwide in the 2000-2020 period. LBOs create economic value by reducing agency problems, improving operating performance, increasing interest tax shields, reducing transaction costs, and allowing for takeover defenses. However, LBOs also have drawbacks, namely: high complexity, off-balance sheet treatment, asymmetric information problems, expropriation of nonequity stakeholders, and increased financial distress. Statistical analysis shows that loan contractual characteristics differ significantly in the pre- versus the crisis period, and both loan spread and major pricing factors differ significantly for deals closed in the U.S. vis-à-vis Europe. In addition, loans to LBOs arranged for U.S. borrowers have higher spreads and upfront fees and have higher loan size to deal size ratios when compared with loans arranged for borrowers located in Europe. On the contrary, loans closed in the U.S. have a much shorter average maturity and are much less likely to be subject to currency risk and to be closed as term loans.

A LEVERAGED BUY-OUT (LBO) is one type of leveraged acquisition, a class of operations that belongs to a wide category of structured finance transactions, namely those that result in leaving the acquired company with a debt ratio that is higher than what it was before the acquisition (Capizzi, 2005; Renneboog and Simons, 2005).

Typically presented as the acquisition of a corporation or division by a group of investors using a high percentage of debt financing and while borrowing against the target´s future cash flows (Kaplan and Strömberg, 2009), LBOs have been subject to wide discussion, concerning problems of financial structure, and the financial and economic performance of firms. Although the higher debt typical to such financing transactions allows for the exploitation of the financial leverage effect, these operations increase the financial risks, exposing management to pressure to guarantee the repayment of the debt and the debt service (Opler and Titman, 1993; Cumming and Zambelli, 2010).

According to the World Economic Forum Private Equity Report (2008), LBO activity has increased greatly over the years, with two booms in the 1980s and

mid-2000s. The second was larger, with a record amount of capital committed to private equity. While the total value of firms acquired through LBOs between 1970 and 2007 has been estimated at $3.6 trillion, $2.7 trillion of these transactions took place between 2001 and 2007 (Singh, 2017). Despite the financial turmoil in the debt markets after 2008, the total value of firms acquired through LBOs between 2008 and 2020 was more than $3.1 trillion. According to Refinitiv Deals Intelligence, global buyout transactions reached $462 billion in 2020, a 3% decrease compared to 2019.

Thus, LBOs are an economically significant financial market segment. However, research on LBOs is relatively scarce and little is known about these operations, particularly their economic motivations and drawbacks, characteristics and players, financing structures, and the recent trends of the LBO market. We intend to fill this gap in the literature by surveying extant theoretical and empirical literature on LBOs. In an LBO, the acquisition takes place off-balance-sheet for the proponents and the bulk of the capital needed for the operation is provided by financial intermediaries primarily through syndicated loans, which typically comprises 60% to 70% of the financing structure (Alves et al., 2021). Therefore, this paper also contributes to the extant literature by examining the evolution of the LBO syndicated loan market, as well as contractual and syndicate structure of loans in LBOs, with a particular focus on loan characteristics in different regions (the U.S. *versus* Europe) and time periods (the pre- *versus* the crisis period). For this purpose, a worldwide sample of 16,458 loan tranches, worth $2,408.1 billion and closed between 2000 and 2020, is used. This sample represents 41.2% of total LBO volume by deal size in the sampling period.

According to Kaplan (1989a,1989b), Lichtenberg and Siegel (1990), Opler and Titman (1993), and Kaplan and Strömberg (2009), LBOs create economic value by (*i*) reducing agency problems, (*ii*) increasing operating performance, and (*iii*) increasing interest tax shields. As a structured finance transaction, an LBO provides a framework for an extensive and comprehensive 'nexus of contracts', which improves future cash flow predictability and lowers asset-in-place riskiness, curtailing asymmetric information problems and mitigating agency conflicts (Leland 2007; Pinto and Santos 2020). Other sources of wealth gains are also presented as motivations, namely wealth transfers, corporate undervaluation, reduction of transaction costs, and takeover defenses (Renneboog et al., 2007; Alves et al., 2021).

However, LBOs also have drawbacks (Kaplan and Strömberg, 2009; Cumming and Zambelli, 2010), namely: (*i*) the potential negative impact on the acquired company; (*ii*) insider managers may hold private knowledge that can be used as insider information in other transactions; and (*iii*) private equity that finances LBOs may weaken the target firms and destroy jobs. Overall, the authors argue that LBOs take advantage of tax benefits and superior information, but do not create economic value.

One of the most compelling characteristics of an LBO financing structure is the inclusion of a broad array of syndicated loans (Axelson et al., 2009). Syndicated loans in an LBO are issued with varying seniority and maturity claims, structured to generate differential interests in the deal, such that senior investors have

priority rights over subordinated investors (Ivashina and Kovner, 2011; Alves et al., 2021). This is corroborated by the sample used in this study: the average number of tranches per syndicated deal to LBOs is 3.9 (3.1 in the U.S. *versus* 5.2 in Europe; 4.3 in the pre-crisis period *versus* 3.3 in the crisis period), with a loan size to deal size average ratio of 32.4% per transaction (38.9% and 23.3% in the U.S. and Europe, respectively).

This work shows that loans to LBOs have significantly contracted during the 2007-2008 financial crisis and the subsequent European sovereign debt crisis, starting to increase slightly from 2011 and with significant growth between 2017 and 2019. In 2020, due to the Covid-19 pandemic, there is a further reduction in the amounts of syndicated loans extended to LBOs, both in the U.S. and Europe. LBO lending is concentrated in the U.S. and Europe, with 49.38% and 40.75% of the total value of LBO loans, respectively; and LBO lending is highly concentrated in five key industries: manufacturing (32.41%), services (31.52%), retail trade (8.34%), communications (8.00%), and utilities (5.71%) sectors account for 86.35% of all LBO lending worldwide.

Statistical results also show that most of the common contractual characteristics of syndicated loans to LBOs differ significantly between deals extended to U.S. *vis-à-vis* European borrowers, except for the proportion of secured loans per deal. Our results show important univariate differences, namely: (*i*) loans' average spreads are significantly higher for deals closed in the U.S. than those closed in Europe; (*ii*) loans arranged for U.S. borrowers have a significantly larger average tranche size, but lower deal size, than those extended to European borrowers; (*iii*) deals in Europe benefit more from tranching – they have a higher number of tranches and thus lower loan size to deal size ratios – than deals in the U.S.; (*iv*) loans extended to European borrowers have much longer average maturity and more banks involved than those arranged for U.S. borrowers; and (*v*) loans in the U.S. are much less likely to be subject to currency risk and to be closed as term loans, and are more likely to be arranged by a domestic lead bank than those extended to LBO deals closed in Europe. Finally, LBO loan contractual characteristics differ significantly in the pre- *versus* the crisis period.

The remainder of the paper is organized as follows. Section 2 describes the typical LBO transaction scheme, the financing structure, and the key participants in LBOs. The economic motivations and drawbacks of LBOs, as well as a survey of the empirical literature, are presented in Section 3. Section 4 characterizes LBO markets. Section 5 presents and compares the financial characteristics of syndicated loans extended to LBOs in the 2000-2020 period. Section 6 presents the main conclusions.

I. LBO: characteristics and players

A. The typical LBO transaction scheme

Weston et al. (2001) present an LBO as 'the purchase of a company by a small group of investors using a high percentage of debt financing.' The promoters,

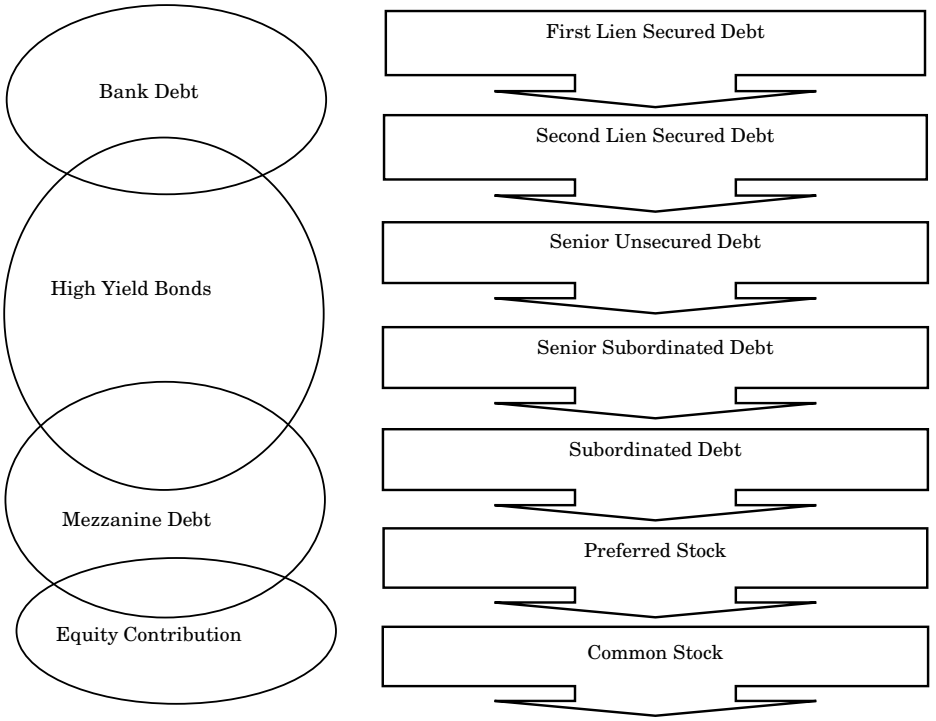
which include a sponsor and, frequently, existing management, organize and implement the buy-out. A similar definition is presented by Kaplan and Strömberg (2009), who refer that in an LBO 'a company is acquired by a specialized investment firm using a relatively small portion of equity and a relatively large portion of outside debt financing. The leveraged buyout investment firms today refer to themselves (and are generally referred to) as private equity firms.' In such a transaction, the private equity typically buys the majority control of the target firm, usually an existing or mature firm. Especially when financial groups akin to private equity funds, venture capital companies or other types of buyout specialists are involved, the LBO transaction is expected to be reversed with a public offering. The aim is to increase the profitability of the company taken private and thereby increase market value.

It is possible to find certain unique characteristics in an LBO transaction, namely: (*i*) it usually requires the incorporation of an SPV (sometimes referred to as 'NewCo' or the acquirer) for the transfer of the ownership which, after being capitalized by the proponents, will launch the offer for the company to be acquired – the so-called 'target firm'; (*ii*) the acquisition happens off-balance sheet for the proponents; (*iii*) the bulk of the capital needed for the operation is supplied by the debt securities provided by banks and financial intermediaries, with the equity raised by the SPV representing a minor part of the resources required; and (*iv*) the debt capital supplied by the banking system is a function of the capacity of the target firm to generate cash flows – the bank syndicate finances the acquirer on the basis of the residual debt capacity of the acquired firm and its ability to repay debt capital and interests. Therefore, only target firms that can repay the financial obligations of the acquisition are good candidates for a leveraged acquisition.

According to Rosenbaum and Pearl (2009), in a traditional LBO transaction, debt comprises, on average, 60% to 70% of the financing structure. Given the inherently high leverage associated with an LBO, debt portion of the LBO financing structure may include a broad array of loans, securities, or other debt instruments with varying terms and conditions. Figure 1 presents the primary types of LBO financing sources by capital structure ranking.

In an LBO, debt always includes two types of loans: (*i*) a senior and secured loan portion, purchased by banks (mainly in the 1980s and 1990s) and institutional investors (hedge funds and collateralized loan obligations managers); and (*ii*) a junior and unsecured portion, financed by high-yield bonds or 'mezzanine debt'. The equity contribution is usually provided by private equity firms and by the new management team that typically contributes to the new equity, although with a small fraction.

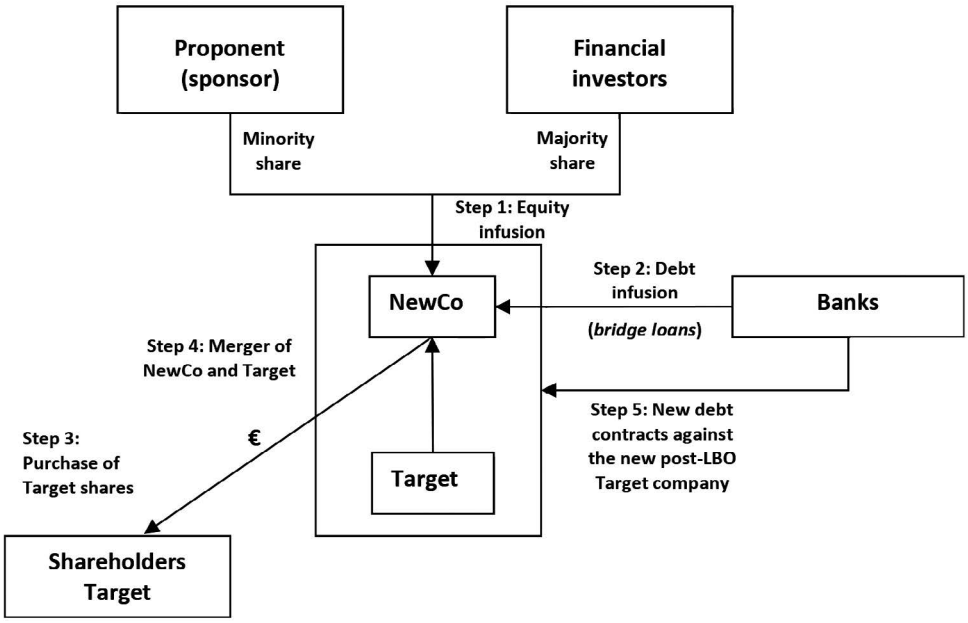
Figure 1
Financing sources in an LBO capital structure



Source: Adapted from Rosenbaum and Pearl (2009).

The implementation process of an LBO can be divided into several phases: (1) identification and selection of the target company; (2) identification of the financial intermediary to assist the buyer; (3) development of the business plan, which summarizes the sustainability of the NewCo business model and the financial feasibility of the transaction; (4) identification of the investors to share the capital of the NewCo; (5) capitalization of the NewCo, usually a company incorporated for the deal – an SPV; (6) negotiation of the lines of credit needed to add to the capital of the SPV, to ensure the payment of the price accepted by the owners of the target firm; (7) the NewCo acquires all the target´s shares; and (8) merger of the target with the NewCo. Thus, the scheme of a typical LBO transaction can be summarized through the following steps (as can be seen in Figure 2): Step 1: creation of a new company (NewCo or SPV) and equity raising; Step 2: debt financing based on bridge loans financial contracts; Step 3: acquisition of the target; Step 4: merger of the SPV with the target; and Step 5: new debt contracts against the new post-LBO target company.

Figure 2
Activities and cash flows involved in an LBO transaction



Source: Adapted from Capizzi (2005).

B. The participants in LBO Markets

There are five key participants in an LBO: (*i*) financial sponsors; (*ii*) investment banks; (*iii*) bank and institutional lenders; (*iv*) bond investors; and (*v*) target management.

The term 'financial sponsor' refers to institutional investors in risky capital; i.e., those entities investing in the risk capital of non-financial companies, that is: private equity firms; merchant banking divisions of investment banks; commercial banks; hedge funds; closed-end mutual funds; venture capital funds; and special purpose acquisition companies. This capital is organized into funds that are usually established as limited partnerships (Kaplan and Schoar, 2003). Private equity funds have gained increasing magnitude in the LBO market. Venture capital funds are operators with specific competences who participate in the capital of recent small/medium enterprises, in order to help them during the difficult startup phase. A private equity firm, which serves as the fund's general partner, raises equity capital through a private equity fund (Axelson et al., 2009). Most of these funds are 'closed-end' vehicles organized as limited partnerships in which the general partners manage the fund and the limited partners

provide most of the capital – typically institutional investors, such as corporate and public pension funds, insurance companies, and wealthy individuals.

Investment banks are key participants in LBOs, both as advisors and as providers of financing. As referred by Rosenbaum and Pearl (2009), they 'perform thorough due diligence on LBO targets (usually alongside their sponsor clients) and go through an extensive internal credit process to validate the target's business plan.' Banks and institutional lenders are the debt providers in an LBO structure. While bank lenders – commercial banks, savings and loan institutions, and finance companies – traditionally provide short-term and amortizing loans, institutional lenders – hedge funds, pension funds, prime funds, insurance companies, and structured vehicles (e.g., CDO funds) – usually provide debt for longer-term and limited amortization loans. Kaplan and Stein (1993) find that banks provided the majority of buyout debt during the 1980s. Similarly, Demiroglu and James (2010) show that commercial banks have played an important role in LBO financing. The authors present the following three explanations why LBO firms rely heavily on bank debt: (*i*) concentrated ownership makes bank loans easier to negotiate; (*ii*) banks are thought to have a comparative advantage in monitoring; and (*iii*) when LBOs are financed with more short-term bank debt the incentive effects of debt are likely to be stronger (Jensen, 1986).

High yield bonds issued as part of the LBO financing structure are purchased by bond investors, which generally include high yield mutual funds, hedge funds, pension funds, insurance companies, and distressed debt funds. Finally, target management plays a crucial role in the marketing of the target to potential buyers, preparing marketing material and financial information, and holding a meaningful equity interest in the post-LBO company.

A stream of the literature tries to answer the following question: 'What is an ideal LBO candidate?' Arzac (2005) presents the following desirable characteristics: (*i*) a firm with predictable revenues and cash-generating capacity; (*ii*) competent management that understands the demands imposed by the financial structure of the LBO, as the focus shifts to cash generation and debt retirement; and (*iii*) the nature of the company's assets.[1] Similarly, Rosenbaum and Pearl (2009) argue that firms with relatively stable and predictable cash flows and significant assets are good candidates for LBOs because they can bear larger quantities of debt.

[1] It is important to note that LBOs are transitory forms of ownership. During the LBO, management attempts to improve operations, and the sponsor looks for a transfer of ownership to a more permanent owner. Exit can be made via: (*i*) an IPO; (*ii*) a sale to a strategic buyer; and (*iii*) another LBO (to provide some liquidity to the sponsor and higher ownership to management). See Arzac (2005) for further details.

II. Literature review

A. The economic motivations and drawbacks of an LBO

Promoters only want to organize an LBO if they expect to obtain a significant gain from the transaction; i.e., if they can increase free cash flows above the level expected by the seller (Alves et al., 2021). Thus, understanding the sources of these gains is a key aspect. The rationale for the emergence of LBOs can be explained by the following sources of wealth gains: (*i*) tax savings (Weston et al., 2001; Renneboog and Simons, 2005; Kaplan and Strömberg, 2009; Guo et al., 2011); (*ii*) reduction of agency costs (Opler and Titman, 1993; Weston et al., 2001; Renneboog and Simons, 2005; Kaplan and Strömberg, 2009; Guo et al., 2011); (*iii*) wealth transfers (Weston et al., 2001; Renneboog and Simons, 2005); (*iv*) better management incentives (Opler and Titman, 1993; Weston et al., 2001; Kaplan and Strömberg, 2009; Guo et al., 2011); (*v*) improvement of operating performance and efficiency (Lichtenberg and Siegel, 1990; Kaplan and Strömberg, 2009); (*vi*) corporate undervaluation (Weston et al., 2001; Renneboog and Simons, 2005); (*vii*) reduction of transaction costs (Renneboog and Simons, 2005); and (*viii*) takeover defenses (Renneboog and Simons, 2005).

Kaplan and Strömberg (2009) highlight 3 of the aforementioned motivations. First, LBOs create economic value by increasing interest tax shields. The high portion of debt in LBOs gives rise to valuable interest tax deductions (Kaplan 1989a; Marais et al., 1989; Guo et al., 2011). Lowenstein (1985), Kaplan (1989a), and Frankfurter and Gunay (1992) argue that the wealth gains from LBOs are largely the result of interest tax shields related to the high leverage that underlies the transaction. However, as (*i*) tax gains benefit does not require an LBO, (*ii*) high leverage increases the cost of financial distress, and (*iii*) LBO firms assume much more debt than was necessary to eliminate their tax earnings, this suggests that there are non-tax related motives for firms using debt in LBOs (Opler and Titman, 1993).

Second, LBOs reduce agency problems. In this context, three important hypotheses can be pointed out: (*i*) the incentive realignment hypothesis; (*ii*) the control hypothesis; and (*iii*) the free cash flow hypothesis. Kaplan (1989a and 1989b) argues that by paying careful attention to management incentives, LBOs reduce agency problems between managers and shareholders. Private equity firms typically give the management team a large equity upside through stocks and options and require management to invest in the company. Additionally, because companies are private, management's equity is illiquid, which reduces their incentives to manipulate short-term results (Nikoskelainen and Wright, 2007). The second key ingredient in reducing agency problems is leverage, which creates pressure on managers, reducing the 'free cash flow' problems described in Jensen (1986). Thirdly, private equity investors control the boards of the acquired companies more actively and are more involved in governance. According to Cao et al. (2016, 2019), LBOs are considered governance devices of the market for corporate control, creating a 'new and superior form' of corporate

governance.[2] LBOs add industry and operating expertise, creating value for target companies. Private equity firms use their industry expertise and operating knowledge to develop value creation plans for their investments. As referred by Gadiesh and MacArthur (2008) and Acharya and Kehoe (2013), a plan can include: cost cuttings, strategic changes, marketing strategy repositioning, and management changes and upgrades.

Finally, LBOs promote improved operating performance: LBOs add industry and operating expertise, creating value for target companies (Lichtenberg and Siegel, 1990; Cumming et al., 2007; Kaplan and Strömberg, 2009). Other sources of wealth gains are also presented as motivations for the emergence of LBOs, namely wealth transfers, corporate undervaluation, reduction of transaction costs, and takeover defenses (Renneboog et al., 2007).

However, Kaplan and Strömberg (2009) present some disadvantages of LBOs. They point out that critics argue that LBOs take advantage of tax benefits and superior information, but do not create economic value. The same idea is presented by Opler and Titman (1993), who state that 'critics of LBOs argue that most of the gains for equityholders arise because of tax savings (Lowenstein, 1985) and the expropriation of nonequity stakeholders (e.g., employees and bondholders) and have expressed concern about the effect of financial distress'.[3] According to Cumming and Zambelli (2010), current criticism of LBOs is associated with (*i*) the potential negative impact on the acquired company; (*ii*) the insider managers may hold private knowledge that can be used as insider information in other transactions; and (*iii*) private equity that finances LBOs may weaken the target firms and destroy jobs. Kaplan and Stromberg (2009) point out that the LBO wave of the 2000s is driven more by the availability of debt financing than by potential improvements in operating efficiency and governance.[4] Particular criticism has been directed at the so-called club deals, those deals in which two or more private equity firms jointly sponsor an LBO (Officer et al., 2010).

B. A review of the empirical literature on LBOs

Empirically, a substantial body of work based on LBOs from the 1980s concludes that leveraged transactions create value based on: (*i*) the benefits of tax shields; (*ii*) disciplining effects of leverage; and (*iii*) better governance mechanisms (e.g., Kaplan 1989a, 1989b; Opler and Titman 1993; Rossi and Volpin 2004; Cao et al., 2016). While agreeing that tax savings are a significant source of gains in LBOs, they also find cash flow improvements after an LBO transaction. According to

[2] Agency cost motivation is also presented by Opler and Titman (1993), Kaplan and Strömberg (2009), and Guo et al. (2011).

[3] Kaplan and Stein (1993), Opler (1993), and Asquith et al. (1994) developed academic studies of bankruptcy costs and bankruptcy cost reduction in highly levered transactions. These studies emerged because firms that carried out LBOs in the late 1980s incurred financial problems that renewed concerns about potential financial distress costs created by these transactions.

[4] The availability of debt financing is driven, in part, by the popularization of financial instruments like collateralized debt obligations, which increases the demand for the underlying leveraged loans (Cao et al. 2016).

Opler and Titman (1993), 'the magnitude of financial distress costs as well as the gains from incentive realignment, may be important factors in determining whether a firm chooses to do an LBO.' They discovered that firms with simultaneously higher cash flows and lower Tobin's q are more likely to undertake an LBO, which is consistent with the free cash flow hypothesis. Based on capital structure theory, Roden and Lewellen (1995) argue that the financing decision to be taken by the buyout group will involve a trade-off between leverage-related costs (agency costs of high levels of debt financing and bankruptcy costs) and leverage-related benefits (disciplining effect of debt on management and the value of tax shields provided by the debt), showing that the amount and the profile of cash flow is a matter of concern in structuring the financing package.

Guo et al. (2011), for a sample of 192 buyouts completed between 1990 and 2006, conclude that cash flow performance is positively related to (*i*) the increase of leverage as a result of the buyout – consistent with the theories of the benefits of debt; (*ii*) the replacement of the CEO by the private equity sponsor, before or at the time of the LBO; and (*iii*) the existence of more than one private equity sponsor involved. Based on a sample of 180 LBOs completed between 1997 and 2007, Demiroglu and James (2010) find that (*i*) the frequency of reputable private equity groups (PEGs) in LBO transactions is negatively related to credit risk spreads; (*ii*) buyouts of high reputation PEGs are financed with less traditional debt; and (*iii*) leverage and maturity are consistent with the hypothesis that the reputation of the PEG affects lenders' perception of a deal's underlying risk.

Andres et al. (2007) examine a sample of 115 European leveraged going to private transactions from 1997 to 2005 and find that corporate governance mechanisms – related to free cash flow, shareholder protection, undervaluation and the market for corporate control – are important factors in explaining the short-term gains generated by European LBOs. The same line of reasoning is presented by Nikoskelainen and Wright (2007). According to Gertner and Kaplan (1996), and Acharya et al. (2013), the boards of LBO companies are smaller and meet more frequently than public companies. Furthermore, private equity investors quickly replace management with poor performance.

The empirical evidence on the operations performance of companies shows largely that LBOs are associated with significant operating and productivity improvements. Cumming et al. (2007) summarize much of this literature and conclude that there 'is a general consensus across different methodologies, measures, and time periods regarding a key stylized fact: LBOs [leveraged buyouts] and especially MBOs [management buyouts] enhance performance and have a salient effect on work practices.'

Recently, Ayash et al. (2017) show that transaction strategies affect sponsors' equity returns; i.e., 'entrepreneurial' strategies, focused on growing revenues, are associated with higher realized equity returns *vis-à-vis* 'classic' strategies focused on operating efficiencies. Dasilas and Grose (2018) provide evidence on the role of governance structures – auditing standards, investor protection and efficacy of corporate boards – in determining wealth gains from buyouts.

Similarly, Cao et al. (2019) provide evidence supporting that institutional context and legal environment impact value creation in LBOs *vis-à-vis* non-LBO takeovers.

Regarding the pricing of syndicated loan spreads in LBOs, Ivashina and Kovner (2011) find that a stronger bank relationship is associated with more favorable borrowing terms, and that other factors like deal size and maturity, as well as targeting firms' creditworthiness affect loan spreads. Colla et al. (2012) find that spreads mostly depend on the target firm's pre-LBO profitability. In addition, they find that variables capturing market conditions and contractual characteristics also affect the pricing of syndicated loans to LBOs. More recently, Alves et al. (2021) show that LBO loan pricing differs significantly in normal *versus* crisis times, and that law and institutional characteristics are important determinants of spreads for deals closed in market-oriented countries.

III. The market for LBOs

According to Renneboog and Simons (2005), there are significant differences between LBO markets in the U.S. *versus* the U.K. and continental Europe. Since 2000, both the number of deals and the value of LBO activity in the continental European market are lagging that of the U.K. for the following reasons: (*i*) the European financial structure to undertake public-to-private transactions is different from that in the U.K.; (*ii*) cultural aspects may also play an important role in the functioning and sophistication of European financial markets; and (*iii*) the legal and fiscal regulation in Europe is traditionally not as favorable as in the U.K. and U.S. Research on LBOs based on U.S. transactions cannot be entirely extrapolated to the U.K. and continental Europe. First, the nature of debt financing differs substantially between the U.S. and those of U.K./European deals. Second, tax issues are different in both the U.S. and the U.K. – e.g., while they represent an important source of wealth gains in U.S. transactions, in the U.K. taxes cannot play such a large role because dividends are untaxed. Third, the U.S. market for corporate control is more effective than that of the U.K. and continental Europe. Fourth, the buyout market in the U.K. and continental Europe has been more closed than those in the U.S. Finally, regulation and organization of the market for corporate control in the U.K. and continental European markets is completely different from the U.S. ones.[5]

Three major stages of LBOs can be identified in the U.S.: (*i*) the 1980s; (*ii*) the early 1990s; and (*iii*) the mid-2000s.[6] LBOs first appeared as an important phenomenon in the 1980s, to the point that Jensen (1989) predicted that such organizations would ultimately become the dominant corporate organizational

[5] For an interesting analysis of the market developments for buyouts in the U.K. and continental Europe see Wright et al. (2006).

[6] See Renneboog and Simons (2005) for a description of international trends and regulatory changes in the LBO market.

form. As private equity firms have become the main equity provider in LBOs[7] and they apply performance-based managerial compensation, highly leveraged capital structures and active governance, Jensen refers to LBOs as superior to those of public corporations with dispersed shareholders, low leverage, and weak corporate governance. As pointed out by Opler and Titman (1993), between 1979 and 1989 the market capitalization of public-to-private transactions in the U.S. alone was more than $250 billion. However, a few years later, '(the junk bond market) crashed; a large number of high-profile leveraged buyouts resulted in default and bankruptcy; and leveraged buyouts of public companies (so called public-to-private transactions) virtually disappeared by the early 1990s (Kaplan and Strömberg, 2009). In the mid-2000s, the U.S. and the rest of the world experienced a second LBO boom, with a record amount of capital committed to private equity. However, since 2008, with the financial turmoil in the debt markets, LBOs have declined again. The credit crisis brought collateralized loan obligations (CLOs) to a halt, consequently the LBO market dried up.[8]

In Europe, the LBO market only experienced one wave. Between 2000 and 2007 the European LBO market saw enormous growth, but has declined significantly since the second half of 2007 (De Maeseneire and Brinkhuis, 2011). As the capital structure of buyouts consists of a high proportion of debt, the global financial crisis triggered by the severe drop in value of U.S. sub-prime mortgages affected the players in the LBO market.

Since 2016, both markets have seen significant growth, contributing to the performance of the LBO market globally. According to Refinitiv Deals Intelligence reports,[9] buyout investment activity in the U.S. companies totaled $262.4 billion in 2020, a 23% increase from the previous year, and which was the greatest annual total on record since 2007. European buyout reached €105.4 billion in deal values in 2020, representing a 19% decline *vis-à-vis* 2019, but a 7% increase in deal values year-over-year since 2007.

IV. The syndicated loan market

This section provides a statistical analysis of LBO syndicated lending worldwide. The sample used consists of individual loans (or tranches) extracted from the Loan Analytics database for the 2000-2020 period. Information is available on the micro-characteristics of the loans (e.g., deal and tranche size, maturity, currency, pricing, rating, type of interest rate) and of the borrowers (e.g., name,

[7] For example, between 2000-2004, the Western European private equity market (including the U.K.) had 48.9% of worldwide leveraged buyout transaction value, compared with 43.7% in the U.S.

[8] CLOs are CDOs backed predominantly by loans. As pointed out by Kaplan and Stromberg (2009), the influx of capital from these vehicles was so extraordinary that the amount of capital committed to private equity in 2006 and 2007 reached record levels, surpassing the leverage buyout wave of the late 1980s.

[9] Refinitiv 2021, United States and Europe Private Equity Buyout Reviews, full year 2020 (https://www.refinitiv.com/pt/products/deals-intelligence).

nationality, industry sector). While Loan Analytics contains detailed historical information on virtually the entire population of syndicated loans closed in international capital markets, only loans with a deal specific purpose code of 'leveraged buy-out' are examined. Loans with no tranche amount or deal amount available and deal status 'not closed' or 'not completed' are excluded. Additional requirements were imposed, namely: each deal must include at least one term loan, the primary purpose of each loan must be the same for each specific deal, and the sum of all loans in the package must equal the deal amount. Finally, tranches closed by financial firms were excluded. These screens have yielded a sample of 16,458 LBO loans, worth $2,408.1 billion – the full sample. Table 1 provides the detailed definitions and sources for all the variables used.

The distribution by year of loans is described in Table 2. Table 2 shows that LBO syndicated lending peaked in 2007 by value and number (2006 for Europe), fell in 2008 and 2009 due to the global financial crisis, started to increase slightly from 2011 and experienced significant growth between 2017 and 2019. In 2020, due to the Covid-19 pandemic, there is a further reduction in the amounts of syndicated loans extended to LBOs worldwide. Table 2 also shows that LBO funding via syndicated loans significantly contracted in Europe during the 2007-2008 financial crisis and the subsequent sovereign debt crisis.

Table 3 presents the distribution of loans to LBOs across borrowers' nationality and industry. Panel A of Table 3 reveals that LBO lending is concentrated in the U.S. and Europe, with 49.38% (47.59%) and 40.75% (43.60%) of the total value (number) of LBO loans, respectively, which is consistent with the argument that LBOs are structured finance transactions more commonly used in countries with developed capital markets and relatively low country risk, since LBOs are expected to result in future public offerings (Alves et al., 2021). Panel B of Table 3 shows that LBO lending is highly concentrated in five key industries; i.e., manufacturing (32.41%), services (31.52%), retail trade (8.34%), communications (8.00%), and utilities (5.71%) sectors account for 86.35% of all LBO lending value and 85.97% of all loans.

Table 1
Definition of variables and sources

Variable	Description	Source
Spread	Loan spread represents the spread paid by the borrower over Libor or Euribor plus the facility fee (all-in-spread-drawn), converted into dollar-equivalent spreads when necessary.	Loan Analytics
Weighted average spread (WAS)	The weighted average between the loan spread and its weight in the deal size.	Loan Analytics
Maturity	Maturity of loan, in years.	Loan Analytics
Loan size	Loan (tranche) size measured in $ million.	Loan Analytics

Variable	Description	Source
Deal size	Deal (the sum of all tranches belonging to the same deal) size measured in $ million.	Loan Analytics
Loan size to deal size	The ratio of loan size to deal size.	Loan Analytics
Number of tranches	Number of loans per deal.	Loan Analytics
Upfront fee	A fee (in bps) paid by the borrower to a bank or a bank syndicate for arranging a loan. A one-time fee paid at the loan closing date.	Loan Analytics
Commitment fee	Fees (in bps) that are periodically paid to the bank syndicates.	Loan Analytics
Fee information	Dummy equal to 1 if fee information is available, and 0 otherwise.	Loan Analytics
Rated	Dummy equal to 1 if the loan has a credit rating from S&P and/or Moody's, and 0 otherwise.	Loan Analytics
Rating	The S&P and/or Moody's rating at closing; the rating is converted as follows: AAA=Aaa=1, AA+=Aa1=2, and so on until D=22. If a tranche has two credit ratings, we computed the average.	Loan Analytics
Number of lenders	The number of lenders participating in the deal.	Loan Analytics
Bank reputation	Mandated arrangers' rank according to Thomson Reuters League Tables. Ranks range from 1 (worst) to 25 (best).	Thomson Reuters DMI
Former lender	Dummy equal to 1 if the target firm already has an established relationship with a lead bank during our sampling period, and 0 otherwise.	Loan Analytics
Domestic lead bank	Dummy equal to 1 if the bank's syndicate lead bank's (or at least one of the lead banks) nationality is the same as the deal country, and 0 otherwise.	Loan Analytics
Covenant intensity	Number of covenants per loan divided by the maximum number of covenants in a single tranche in our sample.	Loan Analytics
Secured	Dummy equal to 1 if fee information is secured, and 0 otherwise.	Loan Analytics
Term loan	Dummy equal to 1 if the loan is a term loan and 0 if the loan is a credit line.	Loan Analytics
Currency risk	Dummy equal to 1 for loans that are denominated in a currency different from the currency in the borrower's home country.	Loan Analytics
Subordinated	Dummy equal to 1 for tranches that are subordinated – classified by Dealscan as 'Junior Subordinated', 'Mezzanine', 'Senior Subordinated', 'Subordinated'-, and 0 otherwise.	Loan Analytics
Fixed rate loan	Dummy equal to 1 for loans with a fixed rate and 0 if the loan has a floating rate.	Loan Analytics
Market-Based	Dummy equal to 1 if the loan is extended to a borrower located in a country with a market-based financial system, and 0 otherwise. See Appendix A.	Demirgüc-Kunt and Maksimovic (2002)

Variable	Description	Source
Creditor rights	Measured using La Porta et al. (1998) indices, revised by Djankov et al. (2007). We use four creditor rights variables (no automatic stay on assets; secured creditors first paid; restrictions for going into reorganization; management does not stay in reorganization) and added up the scores to create an index as in Esty and Megginson (2003).	LLSV (1998); Djankov et al. (2007)
Crisis	Dummy equal to 1 if the closing date falls within the 2008 financial crisis and the subsequent European sovereign debt crisis period (September 15, 2008 – December 31, 2016) and 0, otherwise.	Authors
Country risk	S&P's country credit rating at close. The rating is converted as follows: AAA=1, AA+=2, and so on until D=22.	S&P

Table 2

Distribution of the full sample of loans in LBOs by year

Table 2 describes the distribution of the sample of syndicated loans to LBOs by year. Data are for tranches reported in Loan Analytics with a deal specific purpose code of 'leveraged buy-out' and with tranche amount or deal amount available, closed during the 2000-2020 period. The first column details the number of deals per year, while the second column describes the total value in $US million. The third column presents percentages of the total value per year. In this table, we define Europe as countries belonging to the European Economic Area plus Switzerland.

	All loans			U.S.			Europe		
Year	Number of loans	Total Value ($US million)	Percent of Total Value	Number of loans	Total Value ($US million)	Percent of Total Value	Number of loans	Total Value ($US million)	Percent of Total Value
2000	606	48,996	2.03%	359	24,663	2.07%	137	10,570	1.54%
2001	434	40,181	1.67%	182	11,253	0.95%	131	14,087	2.06%
2002	548	48,063	2.00%	178	13,184	1.11%	234	23,796	3.47%
2003	774	85,676	3.56%	255	28,492	2.40%	318	32,663	4.77%
2004	1,112	108,983	4.53%	466	42,243	3.55%	428	37,795	5.52%
2005	1,344	173,069	7.19%	555	70,794	5.95%	543	75,812	11.07%
2006	1,869	276,588	11.49%	665	101,098	8.50%	817	119,926	17.50%
2007	2,001	414,781	17.22%	894	218,461	18.37%	653	97,143	14.18%
2008	1,035	149,516	6.21%	370	54,593	4.59%	430	48,311	7.05%
2009	229	20,539	0.85%	110	7,115	0.60%	78	7,388	1.08%
2010	471	52,512	2.18%	293	27,016	2.27%	81	9,073	1.32%
2011	554	86,309	3.58%	286	47,548	4.00%	147	14,669	2.14%
2012	458	47,041	1.95%	257	23,675	1.99%	106	13,661	1.99%
2013	486	80,158	3.33%	261	49,593	4.17%	126	15,813	2.31%
2014	645	96,050	3.99%	345	49,339	4.15%	172	25,073	3.66%

	All loans			U.S.			Europe		
Year	Number of loans	Total Value ($US million)	Percent of Total Value	Number of loans	Total Value ($US million)	Percent of Total Value	Number of loans	Total Value ($US million)	Percent of Total Value
2015	627	87,980	3.65%	331	41,988	3.53%	189	24,432	3.57%
2016	755	92,741	3.85%	394	58,267	4.90%	236	20,113	2.94%
2017	806	134,340	5.58%	574	89,701	7.54%	115	15,038	2.19%
2018	696	165,013	6.85%	451	101,669	8.55%	160	38,409	5.61%
2019	791	144,264	5.99%	467	94,135	7.92%	235	26,518	3.87%
2020	217	55,294	2.30%	139	34,401	2.89%	57	14,819	2.16%
Total	16,458	2,408,094	100.00%	7,832	1,189,228	100.00%	5,393	685,110	100.00%

Table 3

Distribution of the full sample of loans to LBOs across borrowers' nationality and industry

Panel A details the distribution of loans to LBOs across borrowers' nationality, while Panel B describes the industrial distribution of tranches. Data are for tranches reported in Loan Analytics with a deal specific purpose code of 'leveraged buy-out' and with tranche amount or deal amount available, closed during the 2000-2020 period.

Panel A: Geographic distribution of loans to LBOs			
Geographic Location of Borrower	Number of loans	Total Value ($US million)	Percent of Total Value
Europe	7,289	1,003,646	41.68%
Western Europe	7,176	981,284	40.75%
U.K.	1,783	296,174	12.30%
Eastern Europe	113	22,363	0.93%
North America	8,093	1,240,225	51.50%
U.S.	7,832	1,189,228	49.38%
Asia	480	80,708	3.35%
Western Asia	24	7,601	0.32%
Eastern Asia	352	59,640	2.48%
China	20	3,251	0.14%
Africa	25	4,120	0.17%
Australia and Pacific	504	58,634	2.43%
Caribbean	54	20,339	0.84%
Latin America	13	422	0.02%
Total	16,458	2,408,094	100.00%

To analyze and compare the main contractual characteristics of loans to LBOs, tranches with information available on spread were selected from our full sample – the high-information sample. A close analysis of the loan data indicates the existence of some extreme values for the spread, time to maturity, and deal amount. Hence, these variables were trimmed at the top and bottom 1% percentiles. Our high-information sample includes 14,035 loans (worth $2,171.8 billion), which correspond to 90.19% of our full sample by volume and 85.28% by number. Summary descriptive statistics of the variables used are presented in Table 4. The deal with the largest number of tranches has 16 loans, with an average number of tranches in our sample of 3.95. The largest syndicated deal (loan) is $12.2 billion ($8.5 billion), and the smallest is for $9.1 million ($0.4 million). The average (median) spread is 368.4 bps (325 bps), while an average (median) loan matures in 6.2 years (6 years).

Table 3
Distribution of the full sample of loans to LBOs across borrowers' nationality and industry (cont.)

Panel B: Distribution of loans to LBOs by industrial category of borrower			
Industrial Category of Borrower	**Number of loans**	**Total Value ($US million)**	**Percent of Total Value**
Commercial and Industrial	15,293	2,164,761	89.90%
Agriculture, Forestry and Fishing	520	43,467	1.81%
Communications	640	192,591	8.00%
Construction/Heavy Engineering	330	38,593	1.60%
Manufacturing	6,267	780,451	32.41%
Chemicals, Plastic and Rubber	1,219	169,886	7.05%
Food and Beverages	657	60,715	2.52%
Machinery and Equipment	2,183	306,311	12.72%
Steel, Aluminum and other Metals	645	62,511	2.60%
Other	1,563	181,028	7.52%
Mining and Natural Resources	67	8,460	0.35%
Oil and Gas	182	35,227	1.46%
Real Estate	515	106,190	4.41%
Retail Trade	1,217	200,741	8.34%
Services	5,555	759,041	31.52%
Services – Capital intensive	1,617	225,703	9.37%
Services – Other	2,851	414,324	17.21%
Wholesale Trade	1,087	119,014	4.94%
Utilities	518	137,439	5.71%
Transportation	645	105,832	4.39%
Other	2	62	0.00%
Total	16,458	2,408,094	100.00%

Table 5 presents basic contractual characteristics for the sample of loans to LBOs. Considering that Carey and Nini (2007) suggest that the corporate syndicated loan market is not globally integrated; offering evidence that spreads and pricing characteristics are different in Europe and the U.S, we also created two sub-samples of syndicated loans considering whether loans are extended to borrowers in the U.S. or Europe. The main goal is to examine if loans arranged in the U.S. *vis-à-vis* Europe are significantly different financial instruments. In addition, the 2008 financial crisis and the subsequent European sovereign debt crisis manifested a shortage of liquidity and banks lost balance sheet capacity to lend, particularly for longer periods. Additionally, several authors (Marques and Pinto, 2020; Alves et al., 2021) show that the common pricing characteristics of debt instruments are significantly different in the pre- *versus* the crisis period. Therefore, in addition, this study examines if this also holds for loans to LBOs, by considering a pre-crisis period from January 1, 2000, through to September 14, 2008, and a crisis period from September 15, 2008 (the first trading day after the Lehman Brothers' bankruptcy filing the day before) through to December 31, 2020.

The mean (median) spread for the worldwide sample of loans to LBOs is 368.4 bps (325 bps). Comparing the sub-samples, mean spread is lower for loans extended to borrowers located in Europe (293.9 bps) than for those arranged for U.S. borrowers (424.7 bps). This result is in line with those of Carey and Nini (2007), who offer evidence that spreads on syndicated loans are, on average, 30 bps smaller in Europe than in the U.S. This result might be related to the fact that average credit ratings for loans extended to a borrower located in Europe (12.2 | BB) are significantly better than those extended to a borrower in the U.S. (14.6 | B). However, the number of observations regarding credit ratings is very scant (140 observations). On average, loan spreads increased significantly in the crisis period when compared with the pre-crisis period, from 309.9 bps to 469.4 bps.

Table 4

Descriptive statistics of the high-information sample to LBOs

This table presents the descriptive statistics. Data are for loans/deals reported in Loan Analytics with a deal specific purpose code of 'leveraged buy-out' and with spread and tranche amount or deal amount available, during the 2000-2020 period. For a definition of the variables, see Table 1.

Panel A: Continuous variables

Variable of interest	Number	Mean	Median	Std. Dev.	Min.	Max.
Contractual characteristics						
Spread (bps)	14,035	368.43	325.00	156.47	35.00	962.50
WAS (bps)	14,035	373.78	365.31	128.25	42.50	925.00
Maturity (years)	14,035	6.18	6.00	1.63	0.08	16.17
Loan size ($US million)	14,035	154.74	50.00	356.24	0.43	8,537.75
Deal size ($US million)	14,035	617.77	225.00	1,195.33	9.06	12,178.90
Loan size to deal size	14,035	32.35%	21.43%	27.04%	0.02%	100.00%
Number of tranches	14,035	3.95	3.00	1.92	1.00	16.00
Upfront fee (bps)	4,035	121.79	100.00	125.02	0.00	2,750.00
Commitment fee (bps)	144	47.11	45.83	11.61	18.75	108.80
Rating [1-22 weak]	140	14.33	14.00	2.73	7.00	22.00
Number of lenders	14,035	5.46	4.00	5.43	1.00	58.00
Bank reputation	14,035	13.16	10.00	10.12	1.00	26.00
Covenant intensity	1,130	40.28%	33.33%	21.67%	16.67%	100.00%
Macroeconomic factors						
Country risk [1-22 weak]	14,035	1.33	1.00	1.26	1.00	15.00
Creditor rights	14,035	1.60	1.00	1.18	0.00	4.00

Panel B: Dummy variables

Variable of interest	N. of issues with data available	% of total available data	Std. Dev.
Market-based	14,035	73.4%	44.2%
Rated	14,035	1.0%	9.9%
Fee information	14,035	29.6%	45.6%
Secured	14,035	82.5%	12.8%
Term loan	14,035	65.0%	47.7%
Currency risk	14,035	9.1%	28.8%
Subordinated	14,035	4.3%	20.4%
Former lender	14,035	7.5%	26.4%
Domestic lead bank	14,035	66.6%	47.2%
Crisis	14,035	37.3%	48.4%
Fixed rate loan	14,035	2.8%	16.9%

An average loan matures over 6.2 years. An interesting result is that a loan closed for a European LBO has an average maturity of 7 years, which is significantly longer than that of a loan extended to a deal in the U.S. (5.6 years). As expected, the average maturity of a loan to LBOs reduced significantly in the crisis period, from 6.5 to 5.6 years. Loans extended to U.S. borrowers exhibit higher mean loan size ($152.9 million) than loans extended to borrowers located in Europe ($150.3 million). On the contrary, the mean deal size is higher for LBO deals closed in Europe via-à-vis in the U.S. ($765.6 million *versus* $497.1 million, respectively). Interestingly, while the mean deal size decreased significantly in the crisis period, the mean loan size increased from $141.5 million in the pre-crisis period to $176.9 million in the crisis period. This is in line with a significant reduction in the number of tranches per deal in the pre- *versus* the crisis period (4.3 and 3.3, respectively).

For the full sample of syndicated loans, the average loan size-to-deal size ratio is 32.4%. Additionally, the loan size to deal size ratio is economically and statistically lower for loans arranged for European borrowers (23.3%) than for loans arranged for borrowers located in the U.S. (38.9%). This result can be explained by the fact that European transactions typically include a larger number of tranches than U.S. deals; an average deal closed in a European country includes 5.2 tranches while average U.S. deals have 3.1 tranches. Thus, we can conclude that LBO transactions in Europe benefit more from tranching than in the U.S.

Table 5

Characteristics of the high-information sample of loans to LBOs

This table presents contractual and macroeconomic characteristics for a sample of 14,035 loans to LBOs, plus two sub-samples created according to whether loans are arranged for a borrower located in the U.S. *vis-à-vis* Europe or in the pre- *versus* the crisis period. Data are for loans/deals reported in Loan Analytics with a deal specific purpose code of 'leveraged buy-out' and with spread and tranche amount or deal amount available, during the 2000-2020 period. For a definition of the variables, see Table 1. We test for similar distributions in contract characteristics using the Wilcoxon rank-sum test for continuous variables and the Chi-square test for discrete ones. ***, **, and * indicates significant difference at the 1%, 5%, and 10% levels, respectively, between the sub-samples.

Variable of interest		All loans	U.S.	Europe		Pre-crisis	Crisis	
Continuous variables								
Spread (bps)	Mean	368.43	424.70	293.87		309.93	469.39	
	Median	325.00	400.00	250.00	***	275.00	450.00	***
	Number	14,035	7,556	5,545		8,805	5,230	
Maturity (years)	Mean	6.18	5.61	7.06		6.53	5.59	
	Median	6.00	5.21	7.00	***	7.00	5.00	***
	Number	14,035	7,556	5,545		8,805	5,230	

Variable of interest		All loans	U.S.	Europe		Pre-crisis	Crisis	
Loan size ($US million)	Mean	154.74	152.93	150.30		141.55	176.95	
	Median	50.00	45.13	57.07	***	50.00	55.00	***
	Number	14,035	7,556	5,545		8,805	5,230	
Deal size ($US million)	Mean	617.77	497.08	765.63		645.91	570.39	
	Median	225.00	151.00	315.04	***	233.56	211.70	***
	Number	14,035	7,556	5,545		8,805	5,230	
Loan size to deal size	Mean	32.35%	38.94%	23.34%		29.28%	37.52%	
	Median	21.43%	27.47%	17.54%	***	20.91%	23.08%	***
	Number	14,035	7,556	5,545		8,805	5,230	
Number of tranches	Mean	3.95	3.09	5.15		4.34	3.30	
	Median	3.00	3.00	5.00	***	4.00	3.00	***
	Number	14,035	7,556	5,545		8,805	5,230	
Upfront fee (bps)	Mean	121.79	147.00	101.18		99.88	159.29	
	Median	100.00	100.00	85.00	***	85.00	100.00	***
	Number	4,035	1,542	2,072		2,547	1,488	
Rating [1-22 weak]	Mean	14.3	14.61	12.25		14.45	13.70	
	Median	14.0	15.00	13.00	***	14.50	14.00	
	Number	140	97	22		118	22	
Number of banks	Mean	5.46	4.08	6.82		6.12	4.35	
	Median	4.00	3.00	5.00	***	4.00	3.00	***
	Number	14,035	7,556	5,545		8,805	5,230	
Bank reputation	Mean	13.16	15.11	10.76		11.42	16.09	
	Median	10.00	17.00	7.00	***	6.00	20.00	***
	Number	14,035	7,556	5,545		8,805	5,230	
Country risk [1-22 weak]	Mean	1.33	1.00	1.48		1.24	1.48	
	Median	1.00	1.00	1.00	***	1.00	1.00	***
	Number	14,035	7,556	5,545		8,805	5,230	
Creditor rights	Mean	1.60	1.00	2.30		1.75	1.34	
	Median	1.00	1.00	3.00	***	1.00	1.00	***
	Number	14,035	7,556	5,545		8,805	5,230	
Covenant intensity	Mean	0.40	0.42	0.37		0.46	0.22	
	Median	0.33	0.33	0.33	**	0.50	0.17	***
	Number	1,130	920	106		880	250	

Table 5
Characteristics of the high-information sample of loans to LBOs (cont.)

Variable of interest		All loans	U.S.	Europe		Pre-crisis	Crisis	
Dummy variables								
Secured	% of total	82.52%	74.95%	93.89%		87.90%	73.44%	**
	Nr of loans	14,035	7,556	5,545		8,805	5,230	
	Loans with d=1	11,581	5,663	5,206		7,740	3,841	
Term Loan	% of total	64.99%	60.46%	70.60%	***	67.73%	60.36%	***
	Nr of loans	14,035	7,556	5,545		8,805	5,230	
	Loans with d=1	9,121	4,568	3,915		5,964	3,157	
Currency risk	% of total	9.15%	1.71%	13.17%	***	8.90%	9.56%	
	Nr of loans	14,035	7,556	5,545		8,805	5,230	
	Loans with d=1	1,284	129	730		784	500	
Former lender	% of total	7.52%	5.10%	11.63%	*	10.20%	3.02%	*
	Nr of loans	14,035	7,556	5,545		8,805	5,230	
	Loans with d=1	1,056	385	645		898	158	
Domestic lead bank	% of total	66.59%	82.95%	48.08%	*	66.50%	66.75%	
	Nr of loans	14,035	7,556	5,545		8,805	5,230	
	Loans with d=1	9,346	6,268	2,666		5,855	3,491	**

The observed level of upfront fees for the full sample is 121.8 bps. The mean levels of upfront fees for loans extended to U.S. borrowers (147.0 bps) are significantly higher than the levels for European loans (101.2 bps). This finding coupled with the fact that U.S. borrowers face higher spreads, suggests that the total cost of borrowing in LBO deals closed in the U.S. is significantly higher than for those closed in Europe.

The average number of participating banks in a deal arranged for U.S. borrowers is 4.1, which is significantly smaller than the 6.8 average number of banks in a European deal. This is consistent with the view that banks in Europe attempt to maximize the number of participants in the bank syndicate to spread out risk. The reputation of mandated arrangers' rank is significantly better in LBO deals closed in the U.S. *versus* Europe; and it increased significantly in the crisis period, with banks with a better reputation participating more frequently in LBO deals.

Loans to LBOs average country rating is 1.3, which is equivalent to an AAA credit rating. As expected, country rating is higher for the U.S. sub-sample when compared with the European sub-sample. This difference was magnified during the European sovereign debt crisis since rating agencies downgraded sovereign ratings from several Western European countries (e.g., Belgium, Greece, Ireland, Italy, Portugal, and Spain).

As expected, the average covenant intensity in a loan arranged for a U.S. borrower is significantly higher than in a loan extended to a European borrower. This is closely related to the fact that the European civil law legal systems provide stronger creditor rights to lenders.

Currency risk varies significantly between loans extended to U.S. borrowers and loans extended to borrowers located in Europe. Loans in U.S. deals are less likely to bear currency risk (1.7%) than loans closed to European borrowers (13.2%). Given the fact that syndicated loans are frequently dollar-denominated, this high level of currency risk is not surprising. LBO deals closed in Europe have a higher proportion of term loans *vis-à-vis* those closed in the U.S. In Europe, the probability of a former lender being involved in a new syndicated deal to fund an LBO is higher than in the U.S. Finally, the proportion of loans extended to LBOs by domestic banks is higher in the U.S. (82.9%) than in Europe (48.1%).

In short, results indicate that the common pricing characteristics differ significantly in value between syndicated loans extended to LBO deals closed in the U.S. *versus* Europe. Similarly, LBO loan pricing characteristics differ significantly in normal *versus* crisis times. Results are generally in line with those presented by Carey and Nini (2007) and Alves et al. (2021).

V. Conclusion

A Leveraged Buy-Out (LBO) is usually presented as the acquisition of a corporation or division, based on a standalone entity created by the proponents, with highly levered capital structures and concentrated equity and debt ownership. As the debt capital supplied is a function of the capacity of the target firm to generate cash flows, only targeting firms that can repay the financial obligations of the acquisition are typically good candidates for an LBO.

This paper surveys extant literature on LBOs. Besides describing the economic motivation for sponsors using LBOs, this paper provides details on LBO characteristics and players, it presents the key participants and recent trends of LBO markets, and compares the financial characteristics of syndicated loans extended to LBO deals worldwide during the 2000-2020 period. Statistical analysis provides evidence: (*i*) corroborating the hypothesis of LBO loan contractual characteristics differing significantly in normal *versus* crisis times; and (*ii*) showing that loan spread and major pricing factors differ significantly for deals closed in the U.S. *vis-à-vis* Europe.

The significant difference in contractual characteristics between the U.S. and European sub-samples might be explained by differences in the type of financial

system: market-based financial system in the U.S. and bank-based financial system in continental Europe. According to Demirgüç-Kunt and Levine (1999), Demirgüç-Kunt and Maksimovic (2002), and Chakraborty and Ray (2006), the way an economy mobilizes resources for investment, selecting investment projects to be funded, and providing incentives for the monitoring of the performance of the funded investments depends on the type of the financial system. In addition, Alves et al. (2021) show that loans to LBOs extended to borrowers in market- *versus* bank-based financial systems are differently priced, and that law and institutional characteristics are important determinants of spreads for deals closed in market-oriented countries. As in Carey and Nini (2007), this work shows that spreads on syndicated loans are, on average, smaller in Europe than in the U.S. Researching the institutional factors that can explain this pricing puzzle is an important avenue for further research.

REFERENCES

Acharya, V. & C. Kehoe. 2013. Corporate Governance and Value Creation: Evidence from Private Equity. *Review of Financial Studies* 26, 368-402.

Alves, P., R. Cunha, L. Pacheco & J. Pinto. 2021. How Banks Price Loans for LBOs: an Empirical Analysis of Spread Determinants. *Journal of Financial Services Research*, forthcoming.

Andres, C., A. Betzer & C. Weir. 2007. Shareholder wealth gains through better corporate governance – The case of European LBO – transactions. *Financial Markets Portfolio Management* 21, 403-424.

Arzac, E. 2005. *Valuation for Mergers, Buyouts, and Restructuring*. John Wiley & Sons, Inc.

Asquith, P., R. Gertner & D. Scharfstein. 1994. Anatomy of Financial Distress: An Examination of Junk-Bond Issuers. *Quarterly Journal of Economics* 109, 625-658.

Axelson, U., P. Strömberg & M. Weisbach. 2009. Why Are Buyouts Levered? The Financial Structure of Private Equity Funds. *Journal of Structured Finance* 64, 1549-1582.

Ayash, B., R. Bartlett III, & A. Poulsen .2017. The determinants of buyout returns: Does transaction strategy matter? *Journal of Corporate Finance* 46, 342-360.

Cao, K., J. Coy & T. Nguyen. 2016. The likelihood of management involvement, offer premiums, and target shareholder wealth effects: Evidence from the 2002-2007 LBO wave. *Research in International Business and Finance* 36, 641-655.

Cao, X., D. Cumming, J. Goh, & X. Wang. 2019. The impact of investor protection law on global takeovers: LBO vs. non-LBO transactions. *Journal of International Financial Markets, Institutions & Money* 59, 1-18.

Capizzi, V. 2005. *Leveraged Acquisitions: Technical and Financial Issues*, In Structured Finance: Techniques, Products and Market, Stefano Caselli and Stefano Gatti .editors., 139-181, Berlin: Springer.

Carey, M. & G. Nini. 2007. Is the corporate loan market globally integrated? A pricing puzzle. *Journal of Finance* 62, 2969-3007.

Chakraborty, S. & T. Ray. 2006. Bank-based versus market-based financial systems: a growth-theoretic analysis. *Journal of Monetary Economics* 53, 329-350.

Colla, P., F. Ippolito & H. Wagner. 2012. Leverage and pricing of debt in LBOs. *Journal of Corporate Finance* 18, 124-137.

Cumming, D., D. Siegel & M. Wright. 2007. Private Equity, Leveraged Buy-Outs and Governance. *Journal of Corporate Finance* 13, 439-460.

Cumming, D. & S. Zambelli. 2010. Illegal buyouts. *Journal of Banking and Finance* 34, 441-456.

Dasilas, A. & C. Grose. 2018. The wealth effects of public-to-private LBOs: Evidence from Europe. *International Review of Financial Analysis* 58, 179-194.

De Maeseneire, W. & S. Brinkhuis. 2011. What drives leverage in leveraged buyouts? An analysis of European leveraged buyouts' capital structure. *Accounting & Finance* 52, 155-182.

Demiroglu, C. & C. James. 2010. The role of private equity group reputation on LBO financing. *Journal of Financial Economics* 96, 306-330.

Demirgüç-Kunt, A. & R. Levine. 1999. *Financial structures across countries: stylized facts*. Mimeograph, World Bank, Washington, DC.

Demirgüç-Kunt, A. & V. Maksimovic. 2002. Funding growth in bank-based and market-based financial systems: evidence from firm-level data. *Journal of Financial Economics* 65, 337-363.

Fabozzi, F., H. Davis & M. Choudhry. 2006. *Introduction to structured finance*. Wiley Finance, New Jersey.

Frankfurter, G. & E. Gunay. 1992. Management buy-outs: The sources and sharing of wealth between insiders and outside shareholders. *Quarterly Review of Economics and Finance* 32, 82-95.

Gadiesh, O. & H. MacArthur. 2008. *Lessons From Private Equity Any Company Can Use*. Boston, MA: Harvard Business School Press.

Gertner, R. & S. Kaplan. 1996. *The Value Maximizing Board*. SSRN Electronic Paper Collection, SSRN: http://ssrn.com/abstract=10563.

Guo, S., E. Hotchkiss & W. Song. 2011. Do Buyouts .Still. Create Value? *Journal of Finance* 66, 479-517.

Ivashina, V. & A. Kovner. 2011. The private equity advantage: leveraged buyout firms and relationship banking. *The Review of Financial Studies* 24, 2462-2498.

Jensen, M. 1986. Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review* 76, 323-329.

Kaplan, S. 1989a. Management Buy-Outs: Evidence on Taxes as a Source of Value. *Journal of Finance* 44, 611-632.

Kaplan, S. 1989b. The Effects of Management Buyouts on Operating Performance and Value. *Journal of Financial Economics* 24, 217-254.

Kaplan, S. & A., Schoar. 2003. Private Equity Performance: Returns, Persistence and Capital Flows. *Journal of Finance* 60, 1791-1823.

Kaplan, S. & P. Strömberg. 2009. Leveraged buyouts and private equity. *Journal of Economic Perspectives* 23, 121-146.

Kaplan, S. & J. Stein. 1993. The evolution of buyout pricing and financial structure in the 1980s. *Quarterly Journal of Economics* 108, 313-357.

Leland, H. 2007. Financial synergies and the optimal scope of the firm: Implications for mergers, spinoffs, and structured finance. *Journal of Finance* 62, 765-807.

Lichtenberg, F. & D. Siegel. 1990. The Effects of Leveraged Buyouts on Productivity and Related Aspects of Firm Behavior. *Journal of Financial Economics* 27, 165-194.

Lowenstein, L. 1985. Management buyouts, *Columbia Law Review* 85, 730-784.

Marais, L., K. Shipper & A. Smith. 1989. Wealth effects of going private for senior securities. *Journal of Financial Economics* 23, 155-191.

Marques, M. & J. Pinto. 2020. A Comparative Analysis of Ex Ante Credit Spreads: Structured Finance versus Straight Debt Finance. *Journal of Corporate Finance* 62, 101580.

Nikoskelainen, E. & M. Wright. 2007. The impact of corporate governance mechanisms on value increase in leveraged buyouts. *Journal of Corporate Finance* 13, 511-537.

Officer, M., O. Ozbas & B. Sensoy. 2010. Club deals in leveraged buyouts. *Journal of Financial Economics* 98, 214-240.

Opler, T. 1993. Controlling financial distress costs in leveraged buyouts with financial innovation. *Financial Management* 22, 79-90.

Opler, T. & S. Titman. 1993. The Determinants of Leveraged Buyout Activity: Free Cash Flow vs. Financial Distress Costs. *Journal of Finance* 48, 1985-1999.

Pinto, J. & M. Santos. 2020. The choice between corporate and structured financing: evidence from new corporate borrowings. *European Journal of Finance* 26, 1271-1300.

Roden, D. & W. Lewellen. 1995. Corporate Capital Structure Decisions: Evidence from Leveraged Buyouts. *Financial Management* 24, 76-87.

Renneboog, L. & T. Simons. 2005. *Public-to-Private Transactions: LBOs, MBOs, MBIs and IBOs*. Working Paper No 94, European Corporate Governance Institute.

Renneboog L., T. Simons & M. Wright. 2007. Why do public firms go private in the UK? The impact of private equity investors, incentive realignment and undervaluation. *Journal of Corporate Finance* 13, 591-628.

Rosenbaum, J. & J. Pearl. 2009. *Investment Banking: Valuation, Leveraged Buyouts, and Mergers & Acquisitions*. John Wiley & Sons, Inc.

Rossi, S. & P. Volpin. 2004. Cross-country determinants of mergers and acquisitions. *Journal of Financial Economics* 74, 277-304.

Singh, M. 2017. *Private equity deal-making hits 10-year high*. Investment Report. Dealogic Research.

Thompson, S. & M. Wright. 1995. Corporate governance: the role of restructuring transactions. *Economic Journal* 105, 690-703.

Weston, J., J. Siu & B. Johnson. 2001. *Takeovers, Restructuring, & Corporate Governance*. New Jersey: Prentice-Hall, Inc.

Wright, M., L. Renneboog, T. Simons & L. Scholes. 2006. Leveraged Buyouts in the U.K. and Continental Europe: Retrospect and Prospect. *Journal of Applied Corporate Finance* 18, 38-55.