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### Leveraged Buyouts

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**LEVERAGED BUYOUTS: A SURVEY OF THE LITERATURE**

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# Leveraged Buyouts: A Survey of the Literature

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**Abstract:** This paper provides an exhaustive literature review of the motives for public-to-private LBO transactions. First, the paper develops the theoretical framework for the potential sources of value creation from going private: a distinction is made between the reduction in agency costs, stakeholder wealth transfers, tax benefits, transaction costs savings, takeover defense strategies, and corporate undervaluation. The paper then reviews and summarizes whether and how these theories have been empirically verified in the four different strands of literature in LBO research. These strands of literature are categorized by phase in the LBO transaction: Intent (of a buyout), Impact (of the LBO on the various stakeholders), Process (of restructuring after the leveraged buyout) and Duration (of retaining the private status). Then, the paper shows that in the first half of the 2000s, a public-to-private LBO wave re-emerged in the US, UK and Continental Europe, whose value vastly exceeded that of the 1980s US LBO wave. Finally, the paper provides suggestions for further research.

Keywords: Public-to-private transactions, Going-private deals, Private equity, Management buyout, Leveraged buyout, Management buy-in, MBO, LBO, reverse LBO.

JEL codes: G3, G32, G34, G38.

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## **Leveraged Buyouts: Motives and Sources of Value**

### **1. Introduction**

The publicly listed corporation is often believed to have important advantages over its private counterpart. A stock market listing enables firms to raise funds in equity markets, increases the share liquidity for investors, allows founders and entrepreneurs to diversify their wealth, and enables the use of stocks and options in remuneration packages. Also, the higher degree of visibility and media exposure of public firms can be an effective tool in the marketing of the company. On the personal level, founders and managers of public corporations generally enjoy more prestige. However, a publicly listed company with dispersed ownership may suffer from too high a degree of managerial discretion resulting from a lack of monitoring which may lead to 'empire building' at the detriment of shareholder value. One way of refocusing the management's attention on shareholder value creation is the leveraged buyout (LBO), in which an acquirer takes control of the firm in a transaction financed largely by funds borrowed against the target's assets and/or cash flows.

This type of transaction - labelled 'bootstrapping acquisition' (Gilhully (1999)) during its infancy in the 1960s - was aggressively promoted in the 1970s by Wall Street practitioners such as Jerome Kohlberg, Jr. During the 1980s, LBOs grew substantially in the US, and gradually spilled over to the UK. Between 1979 and 1989, the market capitalization of public-to-private (PTP) transactions in the US alone was in excess of \$250 billion (Opler and Titman (1993)). This PTP trend was not just limited to the smaller public companies. For instance, in 1989, the LBO-boutique Kohlberg, Kravis and Roberts (KKR) took over and delisted RJR Nabisco in a deal valued at \$25 billion. Apparently, executives, financiers and investors regarded the private firm as a strong alternative to the public corporation such that some even predicted the "eclipse of the public corporation" (Jensen (1989: 61)).

The potential sources of wealth gains from PTP transactions have been a focal point of academic research. While the critics of going-private transactions have continuously emphasized tax advantages and the expropriation of non-equity stakeholders as the main sources

of wealth gains from going private, systematic research on PTP transactions does not agree. Other potential sources of wealth gains are a stronger incentive alignment with a focus on performance and value, the reduction in wasting corporate resources, and improved monitoring capabilities embedded in the governance structure of an LBO. In addition, going private eliminates the costs associated with maintaining a stock market listing, but may also be motivated by a defensive strategy against hostile takeovers. Finally, going private may simply constitute a monetization of an undervalued asset.

The beginning of the 2000s saw a new wave of PTP transactions in the US, UK, and Continental Europe, fueled by cheap debt in the collateralized debt obligation (CDO) markets. Despite vastly exceeding the 1980s' LBO wave in value, this wave came to a halt with the demise of the securitized debt markets at the end of 2007.

The strong increase in the number of deals and average deal value and the fact that past LBO research was limited in scope (given the focus on the US and on the 1980s) call for further research. To facilitate the development of a new research agenda, we analyze the motives for taking public firms private and provide a structured and critical review of the empirical research in this area. We examine which types of firms go private as well as the determinants of takeover premiums in LBO transactions. We also investigate whether the post-transaction value creation as well as the duration of the private status can be explained by the above mentioned potential value drivers. We answer the questions whether or not PTP transactions lead to superior organizational forms compared to public firms, and whether going private is a shock therapy to restructure firms, which generates both strong short- and long-term returns. Finally, the paper documents the trends and drivers of global LBO activity in the 1980s, 1990s, and the subsequent decades.

The paper is organized as follows. Section 2 briefly discusses on the different types of leveraged buyouts and going-private transactions. Section 3 discusses the theoretical considerations underlying the sources of wealth gains from going private deals. Section 4 focuses on the four main strands of the literature (namely, on the Intent to do an LBO, on the Impact of the LBO measured by changes in the share price returns, on the LBO Process or on how the firm

is restructured in the post-LBO stage, and on the Duration of being a private firm) and on the empirical evidence supporting the eight motives proposed by each strand of the literature. Section 5 explains the drivers behind the observed LBO waves that emerged over the past 35 years. Section 6 lines out a future research agenda.

## **2 Definitions and taxonomy of leveraged buyout transactions**

When a listed company is acquired by a non-strategic buyer with a short-term investment horizon (such as a private equity firm) and subsequently delisted, the transaction is usually referred to as a PTP or a public-to-private transaction.<sup>1</sup> As virtually all such transactions are financed by borrowing substantially beyond the industry average, they are called leveraged buyouts (LBOs) or highly-leveraged transactions (HLTs) – an overview of the different types of LBOs is given in Table 1. In fact, LBOs comprise not only PTP transactions but also non-listed firms that undergo a similarly leveraged acquisition. Due to better data availability, recent research is increasingly able to investigate not only PTP LBO transactions, but also these private buyout transactions. However, in line with the scope of this paper, we shall focus on PTP LBO deals and use the terms LBO and PTP transaction interchangeably. We shall state explicitly when a cited paper refers to the wider definition of LBOs (going beyond the PTP transactions).

Four categories of LBOs are generally emphasized in the academic literature. To date, management-led transactions comprise the majority of PTP activity. When the incumbent management team takes over the firm (frequently backed by private-equity investors), the LBO is called a management buyout or MBO. When an outside management team acquires the firm and takes it private, the literature refers to this transaction as a management buy-in (MBI). The fact that an outside management team does not have the same level of private information as the incumbent managers in MBOs, makes MBIs a completely different type of deal. An outside management team will generally target firms where the incumbent management cannot or does

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<sup>1</sup> The European Private Equity and Venture Capital Association (EVCA) defines public-to-private transactions as follows: ‘a transaction involving an offer for the entire share capital of a listed target company by a new company – Newco – and the subsequent re-registration of that listed target company as a private company. The shareholders of Newco usually comprise members of the target company’s management and private-equity providers. Additional financing for the offer is normally provided by other debt providers.’

not want to realize the full potential of corporate value, which entails that MBIs are more frequently hostile transactions (Robbie and Wright (1995)). A deal in which the bidding team comprises members of the incumbent management team and new, externally hired managers is sometimes referred to as a buy-in-management buyout (BIMBO).

When the new owners of a delisted firm are solely institutional investors or private-equity firms, one tends to refer to these transactions as institutional buyouts (IBOs) which are sometimes also called Bought Deals or Finance Purchases. In some IBOs, the continuing effort of the incumbent management team is central to the success of the offer, while in other cases the management team is removed. For the typical IBO in which management stays on, it is customary to reward managerial performance with equity stakes in the new private firm via so-called equity ratchets<sup>2</sup> (Wright, Thompson, Chiplin and Robbie (1991)). In terms of equity ownership, what separates MBOs from IBOs is that in the former the management team has gained its equity interest through being part of the bidding group whereas in the latter it has gained its equity interest via its remuneration package (in case of an IBO).

[Insert Table 1 about here]

After holding their investment for some time, private-equity investors can opt to exit their investment through a secondary initial public offering (SIPO). Firms that were previously taken private and subsequently reobtain public listing status are referred to as reverse LBO (RLBOs). Other means of exiting their investment are trade sales and secondary buyouts, a detailed discussion of which is beyond the scope of this paper.

### **3. What motivates public-to-private transactions?**

Essentially, there are several sources of potential wealth gains that may motivate the going-private decision: the reduction in agency costs (due to incentive realignment, control

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<sup>2</sup> This is an incentive device that enables management in a post-buyout firm to increase its equity holdings upon meeting specified performance targets.

concentration or free cash flow (FCF) reasons), wealth transfers from bondholders or other stakeholders, tax benefits, transaction costs reduction, takeover defense strategies and corporate undervaluation. In this section, we review these motives and relate whether these arguments have been sustained in previous research.

### ***3.1 Shareholder-related agency costs hypotheses***

In this particular case, the central dilemma of the Principal-Agent model (see Sappington (1991) for a general discussion of incentive problems in Principal-Agent models) is how to get the manager (the agent) of a company to act in the best interest of the shareholders of the company (the principals) given that the agent has diverging interests from those of the principals as well as an informational advantage. Agency theory (Jensen and Meckling (1976)) conjectures that the manager of a privately owned company or a listed firm with a major blockholder will be more prone to act in the best interest of the shareholder than the manager of a listed and privately owned company with a dissipated ownership structure. Three hypotheses underlie this claim: the incentive realignment hypothesis, the control hypothesis, and the (FCF) hypothesis.

#### *3.1.1. Incentive realignment hypothesis*

The insights of Smith (1776) and Berle and Means (1932) into the divergence of interests between managers and stockholders in a joint stock corporation are formalized by Jensen and Meckling (1976). In this model, when the manager sells off a proportion of the residual claims to outsiders, the marginal costs of non-pecuniary<sup>3</sup> benefits decrease as (s)he will bear only a fraction of those costs. As a result, the manager increases his (or her) private benefits (a behavioral pattern called ‘shirking’) which decreases the firm’s value for the principal. Private-equity firms rely on various mechanisms to reward managers for good performance when they undertake a PTP transactions (for a detailed review, see Fenn, Liang, and Prowse (1995)). These private-equity firms (the

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<sup>3</sup> These non-pecuniary (also called non-marketable perquisites or private) benefits are not transferable and are investor-specific. Possible benefits could be the reputation or symbolic value of being in control (Aghion and Bolton (1992), salary, and value expropriated from shareholders (Dyck and Zingales (2004), e.g. through the private use of corporate jets (Edgerton, 2012) or acquiring large and costly mansions and estates (Liu and Yermack, 2012)).



principal) try to re-align the interests of the managers (the agents) with their interests. Equity ownership is one straightforward way of doing so. For instance, Kaplan (1989a) reports a median increase in equity ownership of 4.41% for the two top officers and of 9.96% for the other managers in MBOs. This is supported in a more recent study on LBOs from 1996 to 2004, which documents a median increase of 5.4% in equity ownership by the CEO and an increase of 16% for the management team taken together (Kaplan and Stromberg (2009)). For the UK, Acharya et al. (2009) similarly report that the median CEO receives 3% of equity, with the management team as a whole receiving 15% of equity.

*The incentive realignment hypothesis states that shareholder wealth gains from going private largely result from an improved system of incentives providing better rewards for managers and ensuring that they act in line with the investors' interests.*

The effects of the incentive realignment hypothesis at intermediate levels of managerial ownership are contested because entrenchment effects (Morck, Shleifer and Vishny (1988) and McConnell and Servaes (1990)) may render management - even in the wake of poor performance - immune to board restructuring or to the very least may delay corporate restructuring (Franks, Mayer and Renneboog, 2001).

### *3.1.2. Free cash flow hypothesis*

Jensen (1986: 323) defines FCF as “cash flow in excess of that required to fund all projects that have positive net present value (NPV) when discounted at a relevant cost of capital”. Based on empirical results on executive remuneration and corporate performance documented by Murphy (1985), Jensen argues that managers have incentives to retain resources and grow the firm beyond its optimal size - the so-called “empire building” - which is in direct conflict with the interests of the shareholders.<sup>4</sup> By exchanging equity for debt through higher leverage in an LBO, managers

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<sup>4</sup> This problem is most severe in cash generating industries with low growth prospects, as exemplified by the US oil industry in the late 1970s (Jensen (1986)) or the life insurance industry in the 1990s (Wells et al. (1995)).

credibly “bond their promise” to pay out future cash flows rather than retaining them to invest them in negative NPV projects (Jensen (1986)). At the same time, the risk of default attached to the capital restructuring via LBOs increases the downside risk for managers (e.g. losing their jobs) who do not act in the best interest of the principal.

*The free cash flow hypothesis suggests that the shareholder wealth gains from going private are largely the result of debt-induced mechanisms forcing managers to pay out free cash flows.*

However, relying on debt to motivate managers may bring about significant agency costs of debt (e.g., an asset-substitution problem (Calcagno and Renneboog (2007))).

### *3.1.3. Control hypothesis*

Easterbrook and Fischel (1983) and Grossman and Hart (1988:176) explain why individual shareholders in corporations with a dispersed shareholder base may underinvest in monitoring activities (the so-called free-rider problem). After an LBO, the equity ownership of a company is highly concentrated, giving the investors (the principal) stronger incentives and more information to invest in monitoring management (Maug (1998) and Admati, Pleiderer and Zechner (1994)). Furthermore, judging from the viability and success of buyout specialists, DeAngelo, DeAngelo and Rice (1984) argue that these third party investors may have a comparative advantage in monitoring<sup>5</sup>. Altogether, this means that LBOs may create value by resolving the free-rider problem and the resulting lack of monitoring of management (the agent). Subsequent to the transaction, the monitoring by the investors may not only be more intensive, but also of greater quality.

*The control hypothesis suggests that shareholder wealth gains from going private largely result from an improved monitoring system imposed on the management team.*

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<sup>5</sup> For a review of the mechanisms through which control can be exerted, please review Fenn et al. (1995: 33).

While agency cost theory predicts these three distinct sources of wealth gains for LBOs, it may be difficult in practice to distinguish between these hypotheses. Lowenstein (1985) best explains this issue with the carrot-and-stick theory: the carrot represents the increased managerial share ownership allowing managers to reap more of the benefits from their efforts (incentive realignment hypothesis). The stick appears when the default risk of high leverage “forces the managers to efficiently run the company to avoid default” (Cotter and Peck (2001:102)) and pay out FCFs in servicing the debt (FCF hypothesis). The control hypothesis states that private-equity firms can step in for corrective action at any point in time, also when bankruptcy is not imminent.

### ***3.2 Hypotheses related to wealth transfers from bondholders and other stakeholders***

#### *3.2.1. Wealth transfers from bondholders*

There are three main mechanisms through which a firm can transfer wealth from bondholders to shareholders: by (i) an unexpected increase in the risk of investment projects, (ii) dividend payments, or (iii) an unexpected issue of debt of higher or equal seniority or shorter maturity. All these mechanisms can cause wealth expropriation of specific stakeholders. In a going-private transaction, the third mechanism in particular can lead to substantial bondholder wealth expropriation.<sup>6</sup>

*The bondholder wealth transfer hypothesis suggests that shareholder wealth gains from going private result from the expropriation of pre-transaction bondholders.*

[Insert Table 2 about here]

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<sup>6</sup> Allowing systematic risk to vary in a manner consistent with the Black-Scholes-Merton option model framework, Weinstein (1983) presents a more formal bond beta model. The sensitivity of bond returns to the capital structure confirms the conjectured increase in risk for bondholders in case of an unexpected increase in leverage. This finding is empirically confirmed by Masulis (1980), who documents negative bondholder returns in debt-for-equity exchange offers. The bondholder wealth transfer hypothesis then dictates that this increases risk, leads to debtholder wealth losses and constitutes a wealth transfer to equity holders.

Empirical research provides some evidence of wealth expropriation, mainly for those bondholders who are not protected by covenants (see Table 2). Marais, Schipper, and Smith (1989), Amihud (1989) and Weinstein (1983) do not find negative abnormal bond returns but document that going-private transactions are followed by ‘pervasive’ debt downgrades by Moody’s. Travlos and Cornett (1993) find a statistically significant bondholder loss of 1.08%, while Warga and Welch (1993) confirm significant bondholder wealth losses for successful LBOs in the 1985-1989 periods. Asquith and Wizman (1990) report significant losses of 1.1% for unprotected corporate bonds around the buyout, whereas bonds protected by covenants against increases in leverage or against reductions in net worth through mergers experience abnormal gains. Correspondingly, Cook, Easterwood and Martin (1992) find that bondholder losses are sensitive to the presence of restrictive covenants. Billett, Jiang, and Lie (2010) confirm, using a sample of LBOs from 1980 to 2006, that bondholders protected by change-in-control covenants do indeed earn positive returns, but that - although protective covenants have become gradually more widely adopted since the end of the 1980s - unprotected bondholders experience losses. Still, Amihud (1989) explains that the wealth transfer does not represent a loss for bondholders, but is rather a recuperation of the protection, which was greater than originally contracted for.<sup>7</sup>

### *3.2.2. Wealth transfers from other stakeholders*

The empirical literature has paid much less attention to wealth transfers other than those stemming from bondholders. Shleifer and Summers (1988) argue that new investors in hostile takeovers may break the implicit contracts between the firm and its stakeholders (in particular, the employees by reducing employment and wages). Nevertheless, Weston et al. (1998) note that such hostility against employees is not observed in PTP transactions, although there is some evidence of falls in employment and wages after adjustment for industry effects in both the US and the UK (Kaplan

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<sup>7</sup> For a detailed overview of this literature on bond wealth effects: see Renneboog and Szilagyi (2008). In a recent paper on the more general context of takeovers, Renneboog, Szilagyi, and Vansteenkiste (2017) show that bond returns respond to cross-border acquisitions where the target and bidding firms are located in countries with different creditor protection and claims enforcement.

(1989a), Smith (1990), Harris, Siegel and Wright (2005), Goergen, O’Sullivan, and Wood (2011, 2014a, 2014b), Davis, Haltiwanger, Handley, Jarmin, Lerner, and Miranda (2014)).

*The wealth transfer hypothesis suggests that shareholder wealth gains from going private result from the expropriation of pre-transaction stakeholders such as employees.*

### **3.3 Tax benefit hypothesis**

As the vast majority of PTP transactions cause a substantial increase in leverage, the increase in interest-related tax deductions may constitute an important source of wealth gains (Lowenstein (1985)), depending on the fiscal regime and marginal tax rates. Tax deductibility of the interest on the new loans creates a major tax shield increasing the post-transaction (or post-recapitalization) value. For the period 1980 to 1986, Kaplan (1989b) estimates the tax benefits of US PTP transactions to be between 21% and 72% of the premium paid to shareholders to take the company private.<sup>8</sup> Kaplan (1989b: 613) adds that ‘a public company arguably could obtain many of the tax benefits without going private’.

*The tax benefit hypothesis states that shareholder wealth gains from going private result from tax benefits associated with the increase in leverage following the transaction.*

Still, in spite of the apparent advantages of high leverage in LBOs, it is questionable whether high leverage constitutes a credible motive for going private; in a competitive market for corporate control, the predictable and obtainable tax benefits will be appropriated by the pre-buyout investors (Kaplan (1989b)), leaving no tax-related incentives for the post-buyout investors to take a company private.<sup>9</sup> Moreover, LBOs in the 1990s and 2000s were less levered than their 1980s counterparts, limiting the wealth gains from tax benefits.

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<sup>8</sup> These calculations assume that the debt is repaid in 8 years, that the buyout company is able to generate sufficient taxable income, that the marginal tax rate is applied (excluding ESOP tax deductions) and that asset step-ups are effectuated. (Other sources that could generate extra taxes for the treasury as a result of a leveraged going-private transaction are mentioned in Jensen, Kaplan and Stiglin (1989).)

<sup>9</sup> Renneboog et al. (2007), however, do not find a relation between the premium paid in an LBO and the expected tax shields.

### ***3.4 Transaction costs hypothesis***

DeAngelo et al. (1984) note that the costs of maintaining a stock exchange listing are very high. From the proxy statements of, for example, Barbara Lynn Stores Inc., they infer that the costs of public ownership, registration, listing and other stockholder servicing costs, are about \$100,000 per annum. Perpetuity-capitalized at a 10% discount rate<sup>10</sup>, this implies a one million dollar value increase from going private. Other US estimates of servicing costs mentioned in their paper range from \$30,000 to \$200,000, excluding management time. For the UK, Benoit (1999) reports that, for UK quoted firms, the fees paid to stockbrokers, registrars, lawyers, merchant bankers and financial PR companies, as well as the stock exchange fee and the auditing, printing and distribution of accounts amount to £250,000. Some UK CEOs estimate the City-associated costs to be even higher, i.e. between £400,000 and £1,000,000.<sup>11</sup> Given the high costs of maintaining a stock exchange listing, the benefits from remaining public may not outweigh the costs. Mehran and Peristiani's (2010) financial visibility hypothesis proposes that firms choose to go private because they fail to attract recognition from investors or analysts and thus are unable to reap the benefits of a public listing.

*The transaction costs hypothesis suggests that shareholder wealth gains from going private result from the elimination of the direct and indirect costs associated with a listing on the stock exchange.*

### ***3.5 Takeover defense hypothesis***

Lowenstein (1985:743) reports that some corporations have gone private via an MBO “as a final defensive measure against a hostile shareholder or tender offer”, an observation which supports the theoretical arguments set out by Michel and Shaked (1986). Singh (1990) confirms that US MBOs were under significantly greater takeover pressure prior to the MBO than a sample of

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<sup>10</sup> The discount rate is calculated based on the CAPM with the following parameters: a risk-free rate of 5% (current 3-month US T-bill rate from Bloomberg), a long-term market risk premium of 5% (Copeland et al. (2000)) and a beta of 1 (beta of the market).

<sup>11</sup> All UK numbers are from The Financial Times of August 31, 1999.

matched non-MBO firms. Afraid of losing their jobs when the hostile suitor takes control<sup>12</sup>, the management may decide to take the company private. Therefore, the takeover defense hypothesis suggests that the premiums in PTPs reflect the fact that the management team may intend to buy out the other shareholders in order to insulate itself from an unsolicited takeover.

*The takeover defense hypothesis suggests that shareholder wealth gains from going private result from the management's willingness to pay a high premium to buy out the other shareholders in order to retain control.*

### ***3.6 Undervaluation hypothesis***

As a firm is a portfolio of projects (Kieschnick (1987)), there may be asymmetric information between the management and outsiders about the maximum value that can be realized with the assets in place (Ross (1977) and Lehn, Netter and Poulsen (1990)). It is possible that the management, which has superior information, realizes that the share price is undervalued in relation to the true potential of the firm. This problem may be exacerbated when listed corporations, especially smaller ones, find it troublesome to use the equity market to fund expansion, as it may be difficult to attract the interest of institutional shareholders, analysts, and fund managers.

Lowenstein (1985) argues that, when the management is the acquiring party, it may employ specific accounting and finance techniques to depress the pre-announcement share price (Schadler and Karns (1990)). By manipulating dividends, manipulating balance sheets through asset revaluation, refusing to meet with security analysts or even deliberately depressing earnings, managers can use the information asymmetry to their advantage prior to an MBO. Harlow and Howe (1993) and Kaestner and Liu (1996) find that MBOs are preceded by significant abnormal buying of company shares by insiders, whereas outsider-induced buyouts are not, confirming that pre-buyout insider trading is associated with private managerial information. However, managers in MBOs also have a positive earnings management incentive, as this may increase their ability

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<sup>12</sup> Franks and Mayer (1996) show that, over a period of 2 years subsequent to a hostile takeover in the UK, virtually all board members of the target firm left the merged firm.

to obtain MBO financing from external parties and obtain that financing at a lower price (Fischer and Louis (2008) and Linck et al. (2013)).

*The undervaluation hypothesis suggests that shareholder wealth gains from going private result from the undervaluation of assets (in the eyes of the acquiring party)*

An overview of the hypotheses as well as the seminal papers on the theories discussed above are presented in Table 3.

[Insert Table 3 about here]

#### **4. The four strands in the empirical public-to-private literature**

The literature on PTP transactions and leveraged buyouts can be classified into four broad strands. Each strand corresponds to a phase in the buyout process, and requires different econometric methodologies to investigate the sources of wealth creation from LBOs. Figure 1 presents this classification and depicts the research methods used to study each phase. The literature related to the phase of *intent* describes the characteristics of firms prior to their decision to go private and compares these characteristics to those of firms that remain publicly quoted. A discriminant analysis or likelihood model is usually employed to measure the probability that a firm will go private. A (tender) offer for the shares outstanding terminates the phase of intent.

The second strand of the empirical literature measures the *impact* of such an offer and this is estimated by analyzing the immediate stock price reaction (cumulative abnormal return) or the premium paid to pre-transaction shareholders. Once a company is taken private, the literature on the *process* phase investigates the post-buyout process of wealth creation, by means of quantitative or case study methodologies. If, and when, the investor decides to end the company's private status through an exit (e.g. via a secondary initial public offering or SIPO), hazard or duration analysis can be performed to examine the longevity of private ownership and its determinants. This constitutes the fourth strand of the literature, here referred to as the *duration*



literature. We examine which of the eight hypotheses from Section 3 are empirically upheld by each of the four strands of this vast body of literature.

[Insert Figure 1 about here]

#### ***4.1 First Strand: Intent***

##### *4.1.1. Methodological issues*

To identify the variables that describe the characteristics of firms that go private in a LBO transaction versus those that remain publicly listed, discriminant analysis (DA) is traditionally the commonly used methodology in this strand of the literature. DA partitions groups of firms by maximizing between-group variance while minimizing within-group variance of a linear combination that best describes the groups. To predict group membership (LBO versus no LBO) from a set of predictors, often called the ‘training set’, likelihood models like logit and probit analysis are also frequently used. A difficulty in applying these models is that firms that are good candidates for a leveraged buyout are usually also good candidates for financial restructuring through a leveraged recapitalization. To predict membership of various types of LBOs (pure MBOs, private equity (PE)-backed deals, etc.) versus remaining listed, a multinomial logistic regression can be used which generalizes logit and probit models to problems with multiple classes. Lastly, Cox’s proportional hazard model can be used to determine the probability that a firm will go private sometime during its lifetime, based on its initial firm characteristics and their development over time.

##### *4.1.2. Empirical results*

This section provides an overview of the empirical literature on the pre-transaction characteristics of firms going private.

*Empirical results on shareholder-related agency costs, tax benefits, takeover defenses, undervaluation, bondholder expropriation, and transaction costs.*

Maupin, Bidwell and Ortegren (1984) examine whether it is possible to separate ex ante those firms that engage in an MBO from those that remain public. Firstly, their discriminant

analysis shows that the 63 formerly listed companies they study are systematically associated with high managerial shareholdings prior to the PTP transaction (which took place during 1972-83). This is somewhat inconsistent with the incentive realignment hypothesis, as one would expect that in firms with stronger managerial ownership the agency costs of equity are lower and hence that there are smaller gains from going private. Secondly, formerly quoted firms have a more stable cash flow stream than their counterparts that remain public. Thirdly, a systematically lower price-to-book ratio in the buyout sample suggests that undervaluation may be the prime motivation for going private. Finally, a significantly higher dividend yield for the buyout firms confirms the concentration of going-private transactions in mature industries but casts doubt on the FCF hypothesis (Renneboog and Szilagyi, 2017).

For a sample of 102 MBOs over the period 1981-85, Kieschnick (1989) finds strong support for the undervaluation hypothesis, while the data corroborate neither the FCF nor the transaction cost hypotheses. Judging that tax benefits could be retrieved by any potential buyer, he discards taxation as a factor driving MBOs. In contrast, Lehn and Poulsen (1989) find the opposite results for a sample of going-private transactions over largely the same period (1980-87)<sup>13</sup>: their results support the FCF hypothesis. In addition, takeover speculation and the presence of competing bidders are significantly positively related to the likelihood of going private, which may be interpreted as support for the takeover defense hypothesis. Furthermore, as outsiders are not expected to possess the same level of superior information as insiders, the authors interpret this finding as failing to supportive the undervaluation hypothesis.

Several studies re-examine Lehn and Poulsen's (1989) dataset by performing a more sophisticated analysis. For instance, Kieschnick (1998) documents that, accounting for the influence of outliers and misspecified variables in the Lehn and Poulsen sampling procedure on the control sample, the data fail to support the FCF hypothesis. He claims that potential tax bill reductions and firm size are the significant variables, as is the prior takeover interest (i.e. whether the firm was subject to takeover speculation).

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<sup>13</sup> Both studies prefer a maximum-likelihood logit framework as discriminant analysis estimators are not consistent when the data do not follow a multivariate normal distribution.

Firms that go private can be classified into two different groups based on pre-transaction managerial ownership. Halpern, Kieschnick and Rotenberg (1999) find that firms with low pre-transaction managerial shareholdings experience more prior takeover interest and exhibit lower leverage than their counterparts that remain public. In contrast, firms with high pre-transaction managerial control concentration have higher levels of leverage and poorer ex ante stock price performance than the matched firms that remain listed. The results show a positive relation between the propensity to go private and the firm's pre-buyout managerial shareholdings for firms, which is inconsistent with the incentive realignment hypothesis. For firms with both high and low managerial ownership, they refute the FCF hypothesis as a determinant for going private. In a study of 21 reverse LBOs, Kosedag and Lane (2002) find no support for the FCF hypothesis either. However, the likelihood of going private is positively related to the potential tax savings.

A more recent study over the period 1980-2006 by Billett et al. (2010) compares LBOs in the 1980s wave to those in the 2000s wave. They find that the FCF and the undervaluation hypotheses were better supported in the 1980s compared to more recent LBOs. Moreover, change-in-control covenants protecting bondholders against wealth expropriation have become commonplace relative to the 1980s, but firms that issued bonds lacking this covenant protection are twice as likely to be involved in an LBO. This indicates that bondholder expropriation is an important consideration when choosing LBO targets in the second LBO wave.

Mehran and Peristiani (2010) also investigate the second LBO wave using a sample of PTPs from 1990 to 2007. In addition to support for the FCF hypothesis, they find that an important determinant of the decision to go private in this second LBO wave is the failure to generate sufficient attract market visibility. They report that firms that went private were mainly young IPO firms with declining growth in analyst coverage, declining institutional ownership, and low stock turnover. Related to the transaction cost hypothesis, the benefits of public ownership did not outweigh the high costs of a public listing. These results are supported by Bharath and Dittmar (2010) who track a sample of 1,377 US firms from IPO to LBO over the period 1980 to 2004, and find that firms are more likely to go private when they have less analyst coverage and lower institutional ownership. In addition, they stress the importance of liquidity and access to capital

as a public firm, as firms subject to PTPs are less liquid and less financially constrained than their peers that remain public. Importantly, they find that many of these firm characteristics were already apparent at the time of the IPO. They also find support for the FCF hypothesis, but only in the 1980s LBO wave.

The target CEO's retirement preferences - which are not necessarily in the best interest of shareholders - may drive LBOs, according to Jenter and Lewellen (2015) who report a frequency of LBOs of 12% in targets run by retirement-age CEOs (aged 67 or older), relative to 7% in targets run by CEOs aged 59 to 63.

One of the first systematic UK studies on the likelihood of going private is by Weir, Laing and Wright (2005a) who examine incentive effects, monitoring mechanisms and the role of the takeover threat by the market for corporate control for a sample of 95 PTP transactions completed between 1998 and 2000. They compare these transactions to a control sample created on the basis of choice-based sampling by size and industry and reach conclusions that support the incentive realignment and control hypotheses, but refute the takeover defense hypothesis. Furthermore, no supportive evidence is found for the FCF hypothesis or the underperformance hypothesis, although the buyout firms do exhibit lower growth opportunities. Contrary to US evidence, the potential tax savings does not seem to play a role in the choice to go private in the UK. In a follow-up study, Weir et al. (2005b) test the validity of the undervaluation hypothesis. They document that firms going private experience falling market values in the year before going private, while the control sample firms have rising market values. Controlling for other motivations, this perceived undervaluation is a statistically significant determinant of the decision to go private. It is however important to take into account that some buyouts, and MBOs in particular, may be subject to downward earnings and stock price manipulation (Perry and Williams (1994) and Mao and Renneboog (2015)).

Fidrmuc, Palandri, Roosenboom, and Van Dijk (2013) distinguish between pure MBOs and PE-backed MBOs for a sample of 129 UK PTPs completed over the period 1997-2003. They find that management opts for a pure MBO rather than a PE-backed deal when financing constraints are relatively low, i.e. when the firm is undervalued, has higher cash levels, is less

financially visible, and has higher levels of managerial ownership. However, both types of PTPs support the takeover defense.

#### *Other empirical work*

Ippolito and James (1992) observe that there is a significant increase in pension terminations following PTP transactions. This termination rate more than doubles for the sample firms around and after the going-private announcement, relative to firms that remain publicly quoted. Yet, the data do not provide sufficient evidence to support the wealth transfer hypothesis as described by Shleifer and Summers (1988). Likewise, the results remain inconclusive about the efficiency-improving role of going private.

Opler and Titman (1993) remark that little attention has been paid to the role of financial distress in the decision to go private. Using a sample of going-private transactions that spans the 1980s, they find strong significant evidence that the costs of potential financial distress deter firms from going private in a leveraged transaction. This leads them to conclude that “debt financing is crucial for realizing the gains from going private”, while discarding the argument that this is due to the tax benefits of debt usage. The authors also find strong support for the FCF hypothesis.

Weir, Laing, Wright, and Burrows (2004) investigate whether these US conclusions are also valid for the UK. They find no evidence that potential financial distress deters PTP transactions. On the contrary, firms that go private have more collateralized assets than firms that remain public. They also examine PE’s role and find that PE is more interested in participating in diversified firms with higher growth prospects.

[Insert Table 4 about here]

#### *4.1.3. Synthesis: Intent*

To conclude, Table 4 shows that tax benefits are well documented by the 1990s US literature, but lack support in more recent US-based studies. The fact that firms with greater tax shields are more likely to go private does not necessarily mean that the size of a tax shield is an important determinant, as it is straightforward to predict the tax benefits of an LBO such that the pre-

transaction shareholders are able to fully appropriate these benefits (Kaplan (1989b)). It may therefore not be a motive for the parties initiating the LBO or MBO. Moreover, LBOs in the most recent LBO wave were less levered than their 1980s counterparts, casting further doubt on tax benefits as the main incentive for going private. Out of all agency-related hypotheses, the FCF hypothesis receives the most support, especially by more recent studies. However, FCF based incentives have become less important drivers, as improvements in corporate governance in the 1990s have diminished their importance in the second LBO wave relative to LBOs in the 1980s. The second LBO wave appears driven by the trade-off between transaction costs and financial visibility, and the presence of bond covenants. Going-private decisions in the US in the 1980s were also frequently motivated by takeover defense strategies, but this motive has weakened over time, as more recent evidence appears more mixed. In contrast, the undervaluation hypothesis found mixed support in the 1980s, but support from the second LBO wave is stronger, with undervaluation being especially important in pure MBOs.

#### ***4.2 Second Strand: Impact***

If leveraged and management buyouts are associated with value creation, then who is the receiver of these benefits? The wealth effects of going-private transactions have been investigated for several groups of stakeholders: a growing strand of literature has focused on the returns generated by PE funds for their investors, but the majority of the empirical literature has focused on those for the pre-buyout (selling) shareholders.<sup>14</sup> As not all PTP buyouts involve PE investors, we limit our overview to the latter group of studies.

##### *4.2.1. Methodological issues*

Essentially, there are two ways to measure the shareholder wealth effects in PTP research, namely abnormal return estimation and premiums analysis (see Renneboog, Simons and Wright (2007)

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<sup>14</sup> See Cumming, Siegel, and Wright (2007) for an overview of the literature on returns to private equity and LBOs, and Wood and Wright (2009) for an overview of the literature on PE-backed LBOs.

for the methodological discussion). In this section, the econometric issues affecting both approaches will be discussed, along with the empirical results.

*Cumulative abnormal returns* (CARs) measure the information effect of an event at its announcement on the market value of a firm. The CARs are obtained by taking the difference between the expected return, based on the CAPM, and the observed return once the event is announced and the information is released. Table 5 presents the results of event studies in going-private research. The principal period of study has been the 1980s and virtually all samples cover the US or the UK. The typical abnormal return at the announcement of an MBO or LBO is around 20%. This 20% abnormal return seems to be rather low compared to the 25%-30% range for tender offers and mergers.<sup>15</sup> In the second LBO wave, both premium and abnormal returns decline. The smaller wealth gains result from more conservative pricing, improved corporate governance in public firms, the popularity of club deals (deals which involve two or more institutional investors, usually private equity firms), and the prevalence of covenants to protect bondholders.

[Insert Table 5 about here]

Renneboog et al. (2007) point out an important measurement problem with abnormal returns: LBO CARs may be cross-sectionally incomparable, due to the non-uniformity of the information release underlying the stock-price reaction. Two subsamples of firms going private can be distinguished: for the first one, investors immediately know that the type of deal is a leveraged PTP of the type MBO, MBI or IBO. For the second subsample, information reaches the market in two stages: there is an initial notification of a takeover deal<sup>16</sup> (event 1), followed by the announcement disclosing the deal type (LBO, MBO,...) (event 2). Some earlier research has taken the second date as the event date, but the results from this approach are strongly biased given that the initial announcement (event 1) has a large effect on the share price and that the information

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<sup>15</sup> For an overview of abnormal returns around mergers and acquisitions announcements, see Martynova and Renneboog (2008).

<sup>16</sup> E.g., the UK City Code requires firms to disclose takeover negotiations when there are rumours, speculation, or an untoward price movement in the shares, if it can reasonably be determined to be caused by a bidder's actions. Typically, this type of announcements does not embody more than the notification of a negotiation that 'may or may not lead to an offer for the shares of the company'.

content of event 2 should merely be regarded as a correction to the price effect generated by event 1.

An alternative methodology (premiums analysis) to measure the wealth effect calculates the real premium paid in the transaction. Instead of subtracting estimated benchmark returns from the realized returns, this methodology measures the premium as the difference in the firm value based on the final takeover share price and the firm value based on the pre-announcement share price. This means that the premiums are measured over the full period of the going-private transaction, and therefore incorporate all relevant information (and hence do not suffer from the problems abnormal returns suffer from as described above). As Table 6 shows, the average premiums are around 45% in the 1980s LBO wave, but they decline in the second LBO wave, to around 30%. Renneboog et al. (2007) point out that a premiums analysis is complicated because of two problems: the choice of the right pre-takeover share price, and the definition of the final takeover share price. To allow for the share price run-up in the period preceding the first announcement of takeover interest, an anticipation window of 20 to 250 days prior to the event date is chosen. Kaplan's (1989a) LBO study on the US, and Goergen and Renneboog's (2004) and Martynova and Renneboog's (2008b) studies on European M&As both mention that the anticipation window spans approximately the two months before the initial announcement. In earlier research, both the final price offered in the winning bid and the final share price quoted on the stock exchange before delisting have been used. The former price is preferred as the latter only reflects the true value of the bid if shareholders sell their shares to the acquiring party through the stock exchange. However, if shareholders can accept an offer without involvement of the stock exchange (as in the UK), the last quoted share price may reflect only speculative movements.

[Insert Table 6 about here]

As can be observed from Tables 5 and 6, the short-term wealth effects measured by abnormal returns are very different from those measured by premiums. Several explanations account for this difference. First, the CARs are corrected for the expected return whereas the reported average premiums are not. Second, part of the difference can also be attributed to the fact



that abnormal returns which capture the market expectations of the future profits of the buyout, include the probability that a bid fails, while the premium does not. DeAngelo et al. (1984) show that the withdrawal of an offer triggers a two-day abnormal loss of 8.88% (significant at the 1% level), which Marais et al. (1989) confirm.

#### *4.2.2. Empirical results*

As the empirical literature in this strand is abundant, we organize the literature along the hypotheses outlined in Section 3. We also discuss the effects of bidder competition and divisional buyouts on the share prices.

##### *Shareholder-related agency cost hypotheses*

The first systematic study on the cross-sectional variation of shareholder wealth effects in going-private transactions was performed by DeAngelo et al. (1984). They report that the average CARs around the announcement depend on the managerial equity stake prior to the PTP transaction. In transactions where the pre-buyout management stake is at least 50%, the CARs are 20% higher than in transactions where the management owns smaller stakes. However, they do not find a significant difference in the premiums offered in these two types of transactions. This implies a larger probability of success for firms with strong initial managerial control (more than 50%). Abnormal returns occurring at the announcement of the buyout also depend on the post-transaction equity stake held by the manager. DeAngelo et al. also report that the market reaction to the MBO announcement is higher when the management becomes the sole owner than when control is shared with a third party. Lehn and Poulsen (1989) analyze the average premiums for a cross-section by regressing them on a set of explanatory variables that proxy for FCFs, growth prospects, size and potential tax savings. They find that the premiums depend on the level of FCFs. When partitioning the sample based on managerial ownership, the FCF variable proves insignificant for equity stakes above the median. This is consistent with the FCF hypothesis, as agency costs are higher in firms with low levels of managerial ownership. Kieschnick (1998) revisits the Lehn and Poulsen sample, and reaches the opposite conclusion of no support for the FCF hypothesis, after accounting for outliers and redefining the variables. With respect to the

effects of managerial ownership, Frankfurter and Gunay (1992) find that the level of insider net divestment is a significantly positive determinant of abnormal returns. They note that such deals are driven by insiders' need for liquidity, and fail to find evidence supporting the incentive realignment hypothesis for deals with high levels of pre-buyout managerial ownership. For firms whose managers already own a large equity stake, the reunification of ownership and control is thus not the prime motive for going private. This is confirmed by Halpern et al. (1999), who report a U-shaped relation between managerial equity ownership and buyout premiums for poorly performing firms.

Jointly testing the taxation benefits, bondholder wealth transfers, asymmetric information, transaction costs and agency costs hypotheses in a cross-sectional analysis, Travlos and Cornett (1993) find that the industry-adjusted price-earnings ratio (deemed to be an inverse proxy for agency costs) negatively affects abnormal returns. Consistent with DeAngelo et al. (1984), they find that the stock price reaction to MBO announcements is significantly higher than for third-party transactions (MBIs and IBOs).

Calculating CARs and average premiums for a sample of UK PTP transactions taking place in the period 1997-2003, Renneboog et al. (2007) find support for the incentive re-alignment hypothesis, whereas the pre-transaction FCF has no impact, as previously observed by other work on the UK. However, control is a significant determinant of the shareholder wealth effects of going private, an effect that is especially strong in the presence of corporations as monitors.

A number of studies examine the pricing of deals in the recent LBO wave relative to the buyout wave of the 1980s. Both Oxman and Yildirim (2007) and Guo, Hotchkiss, and Song (2011) observe lower premiums and less leverage in the recent LBO wave. However, deals completed towards the end of the wave are priced higher and have riskier capital structures. The premium is positively related to FCF and to the current interest on long-term debt in pre-buyout firms, but better performing firms (in terms of operating margin and Tobin's Q) receive lower premiums, whereas high premiums are paid to firms that are not currently profitable but that have large growth potential, providing support for the undervaluation hypothesis (Oxman and Yildirim (2007)). Demiroglu and James (2010) find that, in the recent LBO wave, the reputation of PE

buyers is positively related to buyout leverage (LBO debt divided by the target's pre-LBO EBITDA), and that leverage is positively related to the price of the deal, suggesting that PE reputation reduces the agency costs of LBO debt.

*Hypotheses related to wealth transfers*

In relation to the bondholder wealth transfer hypothesis, Marais et al. (1989) report a non-significant correlation between pre-buyout debt ratios and abnormal returns. A significant and positive relation would have confirmed that, in firms with high pre-transaction debt ratios, the bondholder wealth transfer contributes to the premiums paid to shareholders to take the firm private. Warga and Welch (1993) show that, in going private transactions, an increase of one dollar in the firm market value of equity is associated with a five cents decrease in the overall value of debt. Likewise, Asquith and Wizman (1990) show that a bondholder wealth transfer to the shareholders exists but is small. Their estimate of abnormal losses to bondholders is only 3.2% of the gains made by shareholders. This evidence confirms that the bondholder wealth transfer hypothesis cannot be rejected, but also that bondholder expropriation cannot be a principal source of wealth gains to shareholders in PTP transactions. In response to the observed expropriation of bondholder wealth in the 1980s LBO wave, the US introduced change-in-control covenants to protect bondholders. Investigating the effect of such protection on the returns to bondholders in the second LBO wave, Billett et al. (2010) report abnormal announcement returns to bondholders lacking covenant protection of -6.76%, whereas protected bondholders earn +2.30%. They conclude that expropriation of bondholders remains an important determinant in LBOs and that the wealth effects to bondholders depend on the existence of such change-in-control covenants.

Andres, Betzer, and Hoffmann (2006) are the first to test for the employee wealth transfer hypothesis, but find no support. Brown, Fee, and Thomas (2009) investigate a supplier wealth expropriation effect: suppliers experience significantly negative announcement returns around the announcement of a downstream LBOs, with the effect being more negative for suppliers that have made substantial relationship-specific investments. The authors conclude that the increased leverage combined with changes in the organizational form in the LBOs increases

these firms' bargaining power with their suppliers, as their results do not appear to be induced by decreases in demand for the suppliers' products or services.

#### *Tax benefit hypothesis*

Kaplan (1989b) argues that tax benefits constitute an important source of wealth gains in going-private transactions. His models show that 76% of the total tax shield is paid out as a premium to the selling investors, supporting the claim that predictable potential tax benefits are appropriable by pre-transaction investors in a competitive market for corporate control. Tax savings and firm size should thus have a positive impact on the wealth gains in LBOs, a finding that is confirmed by Kieschnick (1998). However, Lehn and Poulsen (1989) and, more recently, Oxman and Yildirim (2007) find that the potential tax savings are not a significant determinant of the cross-sectional variation of premiums in US LBOs. For the UK, Renneboog et al. (2007) reject the tax benefit hypothesis, but Dicker (1990), Andres et al. (2006), and Weir et al. (2005a) point out that the tax advantages of financing firms with debt are smaller in Continental Europe and the UK than in the US.

#### *Transaction costs hypothesis*

Travlos and Cornett (1993) are the first to test the hypothesis of transaction costs savings by employing annual costs of listing according to NYSE and AMEX fee schedules (scaled by the market value of equity), but conclude that this hypothesis is not upheld, perhaps reflecting the fact that the true costs of a stock market quotation are much higher than just the listing costs. Renneboog et al. (2007) do find some support for the transaction costs hypothesis: the savings realized by the direct and indirect costs of a listing significantly contribute to the shareholder wealth effects from going private. In a study on US PTPs from 1990 to 2007, Mehran and Peristiani (2010) report that failure to attract market visibility combined with the high costs associated with a public listing led many firms to go private in the second LBO wave.

#### *Undervaluation hypothesis*

Some support for the undervaluation hypothesis is found by Kaestner and Liu (1996), who find evidence suggesting that insider net buying before an MBO is not driven by FCFs or past tax liabilities, but by superior knowledge about the true value of the firm. In contrast, Ang et al. (2014) report that in a large fraction of LBOs between 1997 and 2008, managers divested a portion of their shareholdings. Harlow and Howe (1993) find that MBOs are preceded by significant abnormal buying of company shares by insiders, whereas outsider-induced buyouts (e.g. MBIs or IBOs) are not. Going-private premiums paid by third parties are on average 11% higher than the premiums paid by management teams, with the typical MBO premium being 39%. The correlation of these premiums with various measures of insider trading is only significant for the MBO subgroup, suggesting that insider net buying before an MBO conveys favorable information to the market. Fidrmuc et al. (2013) investigate premiums for a sample of UK MBOs between 1999 and 2003, but they find no significant difference between pure (management-led) and PE-sponsored MBOs. They do however find that MBOs are more undervalued than PE-backed deals, concluding that management in MBOs acquire firms with more growth potential at a premium that does not fully incorporate the improvement in value.

Goh, Gombola, Liu and Chou (2002) study analysts' earnings forecast revisions at the PTP announcement. They report significant upward revisions of earnings forecasts for institutional buyins, but find significantly less pronounced revisions for MBOs. They also examine the undervaluation hypothesis by analyzing the relationship between abnormal analysts' forecast revisions<sup>17</sup> following a going-private announcement, and abnormal returns at the announcement of the transaction. Whereas they find no significant support for the FCF hypothesis or any effect induced by a change in leverage, the authors show that abnormal revisions of analysts' forecast earnings are positively related to the abnormal returns of the PTP announcement. These findings make the authors conclude that going-private announcements indeed convey favorable information about future earnings. Although Lee (1992) reports that there are no sustained

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<sup>17</sup> Goh et al. (2002) calculate the abnormal revision of analyst forecast earnings subsequent to a going-private transaction by using the methodology proposed by Brous (1992). Essentially, the latter constructs the abnormal revision of analysts' forecasts by taking the difference between analysts' revisions of forecasts after the going-private announcement and the expected revisions (based on an event-study methodology), standardized by the stock price.

shareholder wealth increases from MBO announcements that are subsequently withdrawn (suggesting that going-private announcements do *not* convey favorable information on future earnings), Andres et al. (2006) and Renneboog et al. (2007) confirm Goh et al.'s (2002) conclusions. They find that the target's past share price performance is a significant determinant of shareholder wealth gains and abnormal returns, both for MBOs and IBOs (which at best retain part of incumbent management). This confirms that managers in these types of deals are best placed to exploit undervaluation due to informational asymmetries.

Management may employ specific accounting and finance techniques to depress the pre-announcement share price or understate earnings in MBOs (Lowenstein (1985)), For the US, DeAngelo (1986) finds no evidence of systematic earnings manipulation, but Perry and Williams (1994) do document negative earnings manipulation prior to MBOs, decreasing the acquisition price by 19% (Wu, 1997). Similarly, for the UK, Mao and Renneboog (2015) find that strong negative earnings management occurs prior to MBOs, whereas positive earnings management takes place in IBOs (as firms may then be able to increase the debt level at the LBO) and in non-buyout firms (as this type of earnings management positively affects managers' bonuses). Positive earnings management can be used as a signal about the company's prospects thereby easing its financial constraints (Linck et al., 2013). Consistent with this hypothesis, Fischer and Louis (2008) find that managers in MBOs that most rely on external funding manipulate earnings downward the least.

### *Bidder Competition*

PTP transactions with multiple bidders are associated with higher premiums. For instance, Lowenstein (1985) reports that the premiums paid to shareholders in MBO transactions involving three or more competing bidders were on average 19% higher than the premiums paid in cases with a single bidder. Amihud (1989) confirms his findings: 9 out of 15 of the largest LBO transactions over the period 1983-86 received competing bids and the final premium paid was 52.2% compared to 30.7% for cases without bidder competition. Similarly, Easterwood, Singer, Seth and Lang (1994) demonstrate that the premium in a multiple bidder process is about 17%

higher. Consistent with the idea that multiple bidders are associated with higher premiums, Officer, Ozbas, and Sensoy (2010) find that “club bidding” by PE investors (a common practice in PE where multiple bidders jointly submit a single bid) reduces competition and hence depresses the value accrued to target shareholders: premiums are 40% lower and target shareholders earn 10% less of the pre-LBO firm value in club deals relative to LBOs with a single buyer. These results are more pronounced in target firms with less institutional ownership, suggesting that institutions can bargain more effectively with clubs, offsetting some of the effects of reduced competition on prices. Cao, Cumming, Qian, and Wang (2015) further reveal that the premium difference between club deals and single-bidder deals is larger in countries with weak creditor protection (where debt financing is harder to obtain).

The interpretation of these higher premiums in contested LBOs is not straightforward. While the empirical literature usually attributes higher premiums to the mechanics of the competitive process (e.g. Lowenstein (1985) and Amihud (1989)), further nuance is needed. Indeed, Guo et al. (2011) show that post-buyout returns are higher for deals with multiple PE bidders, but they do not find evidence that these returns are related to bidder competition. Deals with multiple PE bidders already generated higher pre-buyout returns, which suggests that deals with better ex-ante prospects are more likely to attract multiple bidders. Higher premiums in contested bids may also occur because of PE overpayment resulting from irrationality or “deal fever” (see e.g. Andres et al. 2006). Alternatively, contested LBOs may signal severe undervaluation, in which case a higher premium is justified.

#### *Empirical results on divisional buyouts*

Studies on divisional buyouts focus on the effects on parent shareholders. Bae and Jo (2002) and Hite and Vetsuypens (1989) argue that there are considerable differences between divisional and whole-firm buyouts. It is expected that divisional buyouts suffer less from the absence of arm’s length bargaining, because the parent company’s management negotiates with the divisional buyout team. Therefore, a conflict-prone role of managers in MBOs is likely not to arise. For a sample of 65 MBO divestments over the period 1984-89, Briston, Saadouni, Mallin

and Coutts (1992) find negative returns of -1.79% to parent shareholders (measured over a [-10,10] window and significant at the 1% level). Apparently, divisional managers still succeed in negotiating a relatively low price for the assets they buy from the parent company. This contradicts the findings of US divisional MBOs (Muscarella and Vetsuypens (1990)) whereby the parent shareholders do not lose on average.

[Insert Table 7 about here]

#### *4.2.3. Synthesis: Impact*

Table 7 summarizes this second strand of the literature. First, we conclude that the undervaluation hypothesis has gained increasing support from US, UK, and Continental European studies, in particular from those on MBO deals, deals which are best placed to exploit undervaluation due to information asymmetries. Second, bondholder wealth losses exist, but only when protective change-in-control covenants are lacking. In addition, suppliers to LBO firms also appear to be negatively affected by downstream LBOs. Third, the evidence on the shareholder-related agency costs hypotheses, more specifically the incentive realignment and FCF hypotheses, is mixed. There is evidence that the incentive realignment hypothesis is only valid for firms where pre-transaction managers hold small equity stakes. The control hypothesis has gained more support in recent studies, however. Fourth, the empirical evidence does not seem to support the argument that increased tax shields from going private are an important source of wealth gains. Fifth, it is remarkable that the majority of the evidence from this strand of the literature comes from the US and to a lesser extent the UK. This calls for systematic research on this strand from other parts of the world.

#### *4.3 Third Strand: Process*

So far, we have discussed the empirical results for the determinants of the firm-specific probability of going private, and how much acquirers generally pay in order to obtain the required proportion of shares to delist the company. After these two initial phases (the *intent* and *impact* of the buyout), the firm starts a new life, away from public scrutiny, and usually disappears from the public forum.



Fox and Marcus (1992) note that it is imperative that these firms do not vanish from the academic radar. After all, the scientific debate about the real role of the leveraged going private transaction, being either a more efficient organizational form (Jensen (1989)) or simply a vehicle to gain tax benefits (e.g. Lowenstein (1985)), cannot possibly be resolved without a detailed study of the post-transaction performance. After the acquiring party has paid a premium to take the company private, the process by which it recovers these out-of-pocket costs and puts the resources under its control to a more valuable use can result in interesting insights into the real sources of wealth gains from buyouts.

#### *4.3.1. Methodological issues*

The empirical research in this strand is based on two distinct research methods: while most researchers have employed large-sample quantitative studies, some have successfully used case studies and interviews/surveys to detect the sources of wealth creation from going private.

Quantitative studies have employed samples ranging from around 30 (Liebeskind, Wiersema, and Hansen, (1992)) to 35,752 observations (Harris et al. (2005)). Using performance data, the studies deploy a variety of econometric methodologies (univariate and multivariate) to assess the (sources of) changes in performance. The majority of studies compare the pre- and post-LBO performance. In addition, a substantial number of papers focuses on reverse LBOs (secondary IPOs), and compares the performance during the public, the private and the renewed public status of the firms. Fox and Marcus (1992) and Wright et al. (1995), however, argue that reverse LBO performance studies should not be used to make inferences about going private in general, as these studies use samples biased towards those LBOs that return into public hands, and which are likely to be the strongest performers.

In general, quantitative studies suffer from three econometric challenges. First, data availability is problematic, as private firms do not have to disclose detailed financial information. Furthermore, the available information on private firms induces a size bias because larger private firms still release more information than smaller firms. Second, Smart and Waldfogel (1994) and Palepu (1990) claim that quantitative studies mistakenly compare post-transaction performance

to pre-transaction performance: post-transaction performance should be compared to the *expected* performance that would have occurred without a buyout in order to ascertain whether or not performance improvements are attributable to the LBO process. A third econometric problem, mainly prevalent in older studies, is that some papers match LBO firms with non-LBO firms without controlling for industry and time effects.

A small number of studies employ the case study methodology. Yin (1989) argues that case studies can provide more direct answers through their ability to deal with research settings with a large number of variables, or where variables tend to be qualitative. Case studies can therefore better explore the organizational links between going private and performance improvements (Baker and Wruck (1989)).

#### *4.3.2. Empirical results*

This section discusses the most important papers from the large body of empirical work on the post-buyout wealth creation process. We categorize the papers according to the research methodology employed. The quantitative studies are subdivided into two types depending on whether their sample is based on (i) firms under private ownership or (ii) reverse LBOs. Case studies are a third type. Each type is discussed in a different section. We discuss the effect of financial distress in buyouts in the fourth section.

##### *Quantitative studies: firms under private ownership*

Kaplan (1989a) analyzes the post-transaction operating performance of 48 MBOs that took place during 1980-86. He finds that industry-adjusted operating income does not increase during the first two years subsequent to the buyout, but grows by 24.1% in the third year. But when he controls these findings for divestitures, the bought-out firms strongly outperform their public counterparts in every post-buyout year. Kaplan also documents that industry-adjusted capital expenditures fall significantly after the buyout, which is in line with the curbing of management's 'empire-building tendencies' provided that pre-buyout firms had large levels of FCFs. However, in bought-out firms that do not generate high FCF, restricting capital expenditures may signal an

underinvestment problem induced by the debt burden. Both Smith (1990) and Kaplan (1989a) find evidence that the post-buyout operating performance (median operating cash flow per employee and per dollar of asset value) increases more than the industry median from the year prior to the transaction to two years after the transaction. Tighter working capital management seems to be a small, contributing factor, while a reduction in spending on discretionary items or capital expenditures cannot explain the improved operating performance. Smart and Waldfogel (1994) revisit Kaplan's (1989a) sample and compare the realized performance with the pre-buyout *expected* performance (the expected change in performance that would have occurred without the buyout), and caution for this possible effect: a firm's performance pattern may be cyclical, and when the LBO restructuring occurs when the firm's performance is below its historical mean, the performance improvement would then be erroneously attributed to the buyout mechanism. Smart and Waldfogel use two methodologies to calculate expected performance changes since the period prior to the LBO. In the first, they forecast the sales/income ratio by estimating a dynamic performance regression on the firm's annual performance history up to the year before the transaction. The second measure is the last expected income/sales improvement as predicted by analyst forecasts in Value Line before the LBO announcement. They still find however that operating performance improvements are similar to those reported by Kaplan (1989a).

Muscarella and Vetsuypens (1990) perform a similar exercise for a sample of PTPs (both whole-firm and divisional buyouts) that went public again ("reverse LBOs"). Reverse LBOs require the disclosure of financial statements covering several years of operation under private ownership, allowing the authors to directly study the performance of PTPs. Restructuring activities explain the strong improvements in efficiency after an MBO. The authors argue that the premium is more likely to capture the efficiency improvements in divisional buyouts than in whole-firm buyouts. The reason is that there is less asymmetric information about a divisional MBO than about a whole-firm going-private transaction because in the former the negotiating management teams of the parent and division are both insiders. Efficiency gains reflect real operating gains; the accounting variables show that these improvements result mostly from cost cutting, and not from the generation of more revenues. Divisional buyouts indeed appear to have

more pronounced efficiency gains, which gives more support to the undervaluation hypothesis for whole-firm MBOs. More recently, Fidrmuc et al. (2013) find support for the undervaluation hypothesis, especially for MBOs without backing from a PE partner. These pure MBOs show improved operating performance after the deal, whereas PE-backed deals already outperform their peers prior to the transaction.<sup>18</sup> In contrast, neither Kaplan (1989a) nor Smith (1990) support the undervaluation hypothesis. Kaplan observes that pre-MBO financial projections, upon which the offer price will be based, systematically overstate the future realizations. Smith (1990) observes that cash flows tend not to increase after a failed buyout proposal. Post-buyout cash-generation in defensive and non-defensive (e.g. management-induced) transactions do not differ, which undermines the undervaluation hypothesis in that MBOs are motivated by private information held by the management.

Many papers also elaborate on the effects of a PTP transaction on the firm's employees. Their conclusions are summarized in Table 8. Despite the popular view being that employees of an LBO are subjected to layoffs and wage reductions, empirical research concludes that employees benefit from the spillover effects of investments in production methods and operations by the new owners (Agrawal and Tambe, 2016). When controlling for reduced employment resulting from post-transaction divestitures, Kaplan (1989a) reports that median employment rises by 0.9%. Muscarella and Vetsuypens (1990) report that going-private transactions do not cause layoffs, results that are confirmed by Smith (1990) who also notes that the number of employees from the year before the MBO until the year after the deal grows, but more slowly than the industry average. Davis et al. (2014) investigate 150,000 target "establishments" (factories, offices, and other physical locations where business takes place) in US PE deals from 1980 to 2005. They find that, although LBO firms' employment declines by 6% (relative to the control firms), LBO firms also create more new jobs at new establishments, resulting in net employment declines of less than 1%. Agrawal and Tambe (2016) even find that target workers' employability improves, especially for those whose jobs are transformed by production upgrades by the new owners after

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<sup>18</sup> Cumming and Zambelli (2017) show that there is a link between the time spent on due diligence and post-buyout performance in PE deals. This suggests that better due diligence ensures a better selection of buyout targets in terms of subsequent performance.

an LBO: whereas technological change would have rendered their skills obsolete, workers in LBO firms earn higher long-run wages and their post-LBO employment spells (fraction of time that a worker is employed relative to the total amount of time observed in the work force) are 6 to 9 percentage points longer.

For a sample of 1,350 UK LBOs from 1999 to 2004, Amess and Wright (2007) find that, relative to non-LBOs, wage growth is lower for both MBOs and MBIs, and employment growth is higher for MBOs but lower for MBIs. The authors interpret this as evidence that MBIs are more likely to break implicit agreements and transfer wealth from employees to the new owners, while MBOs are more capable of exploiting higher growth opportunities. For UK IBOs on the other hand, Goergen, O'Sullivan, and Wood (2011, 2014a) report a significant loss in employment and lower wage rates in the year following the IBO, but find no significant changes in firm productivity and profitability. These findings are confirmed by in-depth interviews of industry and union representatives, who argue that management in MBOs are less likely to get rid of employees compared to incoming management in IBOs (Goergen, O'Sullivan, and Wood (2014b)). For LBOs in general, however, Amess and Wright (2012) find no significantly different employment effects between LBOs and a control sample contingent on the size of the target firm. Bacon, Wright, Ball, and Meuleman (2013) assess the labor implications of PE LBOs; they show that MBIs and IBOs are more likely to reduce employment and that the effects on wages are generally more positive in MBOs than in MBIs. In addition, they demonstrate that post-buyout employment and wage effects tend to be more positive outside of the US and the UK. Guery, Stévenot, Wood, and Brewster (2017) study PE-backed buyouts in France, and find that Anglo-American PE investors are more likely to reduce employment and wages than domestic French PE investors. However, Anglo-American PE firms are as likely as PE firms from other countries to introduce performance-enhancing human resource practices in Continental European buyout firms, suggesting that foreign PE investors adapt to the host country of the bought-out firm (Bacon, Wright, Meuleman, and Scholes (2012)).

In another interesting, plant-level study, Lichtenberg and Siegel (1990) investigate the consequences of MBOs on employment, wages, innovation, and total factor productivity. They

document that white-collar workers experience compensation and employment losses, whereas blue-collar workers are not affected. Over the three years following the going-private transaction, total factor productivity growth at the plant level increases by 8.3% above the industry mean, and research spending increases both on an absolute basis and relative to the peer firms. Similarly, Harris et al. (2005) report plant-level productivity increases in UK MBOs between 1994 and 1998, probably arising from agency cost reductions and resource relocation. Lerner, Sorensen, and Stromberg (2011) also find for a sample of public and private US LBOs backed by PE funds that firms' patent quality increases in the post-buyout years. Amess, Stiebale, and Wright (2016), however, distinguish between public-to-private and private-to-private PE-backed LBOs in the UK, and find that, although patent stock increases in the private-to-private transactions, there is some evidence that public-to-private transactions reduce patent activity.

Zahra (1995) uses interview data to uncover the role of entrepreneurship in performance improvements in the post-buyout process for LBOs of non-listed firms. He documents that, even with a high debt burden, innovation and risk taking is not stifled. Post-buyout performance improvements arise from an increased emphasis on commercialization and R&D alliances, as well as from improved quality of the R&D function and intensified venturing activities.<sup>19</sup> Although he does not estimate a statistical relation, Zahra (1995:241) explains that this revamped entrepreneurial spirit could be the result of reduced agency costs.

Liebeskind, et al. (1992) investigate the incentive realignment hypothesis by testing if and how corporate restructuring affects the firm and its post-transaction strategy. Using a sample of 33 of the largest LBOs from 1980 to 1984, and a matched control sample of companies that remain public, they find that managers of going-private firms resort to more downsizing of their businesses and to expanding production lines less. However, the business mix of the corporate portfolios does not change. The incentive realignment following the buyout thus induces managers to pursue a focus strategy and to forego excess growth.

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<sup>19</sup> As a caveat on survey-based studies, it is important to realize that interviewees operating in the industry may be less critical and more optimistic about post-buyout performance improvements.

Jones (1992) focuses on the use of accounting control systems in the new firm after going private. He finds that an improvement in operational efficiency is achieved through modifications of the organizational structure. Going private leads to improved planning techniques that match the organizational context better.

An important nuance to the positive view sketched in some of these papers is given by Kaplan and Stein (1993). They point out that US PTP transactions made in the latter half of the 1980s were pricier and riskier, which eroded the returns of taking a company private. Long and Ravenscraft (1993) confirm that the performance gains for LBOs and MBOs completed in the latter half of the 1980s decline, but performance and efficiency improvements remain substantial. For instance, Opler (1992) calculates that for the 20 largest transactions in the 1985-90 period, operating profits per dollar of sales rise by 11.6% on an industry-corrected basis. Per employee, this increase is even as high as 40.3%. In addition, leveraged going-private transactions do not seem to decrease spending on R&D.

Guo et al. (2011) investigate the value creation in the recent LBO wave. In line with Kaplan and Stein's (1993) and Long and Ravenscraft's (1993) results for the 1980s wave, they show that deals in the latter half of the 2000s wave were priced higher and had riskier capital structures. Guo et al. also report that the operating performance of post-buyout firms is enhanced by increases in leverage and improved corporate governance activities, although performance remains comparable to the benchmark firms. This conclusion is supported by Cohn, Mills, and Towery (2014) for a sample of 317 US LBOs between 1995 and 2007 as they find little evidence of improved profitability or operating efficiency.

In contrast, Boucly, Sraer, and Thesmar (2011) are able to identify operating improvements in LBO targets for a sample of 839 French deals from 1994 to 2004. Although post-buyout sales and employment growth is concentrated in private-to-private transactions, public-to-private transactions show an increase in target profitability of 5%. Similarly, Bergstrom, Grubb, and Johnsson (2007) find a significant and positive impact on operating performance in a sample of Swedish buyouts. For the UK, Wilson, Wright, Siegel, and Scholes (2012) find that PE-backed buyouts were more productive and more profitable both before and after the 2007 financial crisis,

relative to comparable firms that did not experience buyouts. Valkama, Maula, Nikoskelainen, and Wright (2013) investigate the drivers of holding period returns in PE-backed UK buyouts between 1995 and 2004. They find that the returns are driven by leverage, the size of the buyout, the acquisitions made during the holding period, and industry growth (with the latter being particularly strong in insider-driven and divisional buyouts).

[Insert Table 8 about here]

#### *Quantitative studies: reverse LBOs*

Some papers focus on reverse LBOs (RLBOs). DeGeorge and Zeckhauser (1993) predict that asymmetric information, debt overhang, and behavioral problems can create a pattern of superior performance before the RLBO (the private stage), and disappointing results afterwards (the public stage). Their empirical study of 21 RLBOs between 1983 and 1987 confirms their hypothesis.

Holthausen and Larcker (1996) expand this study by analyzing the value drivers of the accounting performance for 90 RLBOs (1983-88). They find that, although leverage and insider equity ownership are reduced in RLBOs, both remain high relative to the industry-adjusted numbers of quoted firms. Thus, they argue that RLBOs are in fact hybrid organizations because they retain some of the characteristics of an LBO after the flotation. Their regression analysis strongly upholds the incentive realignment hypothesis. For at least four years after their secondary IPO, these firms outperform their industry in terms of accounting performance but experience a performance decline thereafter (which Bruton, Keels and Scifres (2002) confirm). Holthausen and Larcker (1996) speculate about the causes for this lagged performance reduction: they believe that RLBOs gradually lose their typical LBO characteristics and evolve towards the typical firm in the industry. They also find that capital expenditures increase whereas R&D expenditures decrease after the Secondary IPO, but that RLBO firms seem to be more efficient with respect to working capital requirements. Like DeGeorge and Zeckhauser (1993) and Mian and Rosenfeld (1993), they do not find stock price underperformance, until at least four years after flotation. RLBOs are therefore rationally priced and do not suffer from long-term underperformance (Ritter (1991)). Cao and Lerner (2009) confirm that RLBOs appear to perform at least as well as other IPOs and



the stock market as a whole. Relative to the 1980s, RLBOs in the second wave are larger, more leveraged, more profitable, and have more profitable underwriters, although they also find evidence of a deterioration of buyout returns over time due to increased competition for transactions.

### *Case studies*

Some interesting clinical studies have been published to explore the organizational links between going private and performance improvements. Investigating the MBO of O.M. Scott & Sons Company, Baker and Wruck (1989) confirms the results of large sample studies that high leverage and managerial equity ownership lead to improved incentives and, subsequently, to improved performance. Of equal importance in terms of their contribution to performance, however, are the restrictions imposed by debt covenants, the emphasis on managerial compensation (and the incentives it creates), the decentralization of decision making, and the relations Scott managers had with the third-party buyout team of Clayton & Dubilier partners. Baker and Wruck (1989) conclude that the performance improvements were related to some specific organizational characteristics of leveraged buyouts, and not just because these improvements were not made before when the firm was still in public hands.

Denis (1994) provides similar evidence by comparing a leveraged recapitalization (Kroger Co.) with an LBO (Safeway Stores Inc.). He finds that, although both firms considerably increase leverage, the improved managerial equity ownership, boardroom change, monitoring by an LBO specialist firm, and executive compensation associated with the LBO are responsible for the more productive cash generation in Safeway Stores. Still, Denis acknowledges that the leveraged recapitalization did generate performance improvements. This paper suggests that an LBO is not only about leveraging the business; it is a completely different organizational form with its own value improving characteristics. This implies that, not all, but part of the gains from going private can be attributed to the new organizational form of an LBO.

Behavioral issues like the social and political consequences of changes in ownership on the motivation of managers are examined by Green (1992) in eight case studies of UK divisional

MBOs. Although managers in the investigated MBOs seem to work harder and are more entrepreneurial relative to those in non-buyout firms, the prospect of financial rewards does not appear to be the main motivator. Rather, contrary to beliefs commonly held by financial economists, it was the changed working conditions that allowed them to do their work more effectively. In fact, this finding casts doubt on the incentive realignment hypothesis, as it means that innovativeness drives ownership concentration, rather than the other way around. Indeed, Bruining and Wright (2002) find that management buyouts of non-listed firms occur mostly in firms where entrepreneurial opportunities exist. Clearly, these case studies confirm the claim that MBOs are more than just a vehicle to improve efficiency in a mature-sector company (Wright, Hoskissen, Busenitz and Dial (2000)).

Specifically for management buyins of unquoted UK firms, Robbie and Wright (1995) find that, all too often, MBI teams cannot adequately deal with problems that occur post-transaction. Such problems were not anticipated in the due diligence examination but substantially impede the execution of a new strategy. The evidence that there is a lack of accurate information turns out to be a major cause of problems in third-party transactions. Additionally, Robbie and Wright (1995) find that the success of an MBI requires that the incentive package should take the context of the transaction into consideration, and should be sufficiently flexible to enable capital suppliers and monitors to respond to emerging problems. This supports the incentive realignment hypothesis, while underlining the importance of the improved monitoring function via LBOs.

#### *Financial distress of LBOs*

Although there are case studies on individual going-private firms in trouble (see e.g. Bruner and Eades (1992) and Wruck (1991)) as well as some large sample studies (e.g. Andrade and Kaplan (1998) and Easterwood (1998)), research which directly tests the effects of economic recessions is scarce. Nevertheless, Wright, Wilson, Robbie and Ennew (1996) find that the probability of failure of buyouts and buy-ins of unquoted companies is reduced by managerial incentive plans and well-timed corporate restructuring (including the introduction of new products, cutting labor, or resolving pre-buyout cash flow problems). Consistent with Bruner

and Eades (1992), they find that excessive leverage is a strong predictor for failure when macro-economic conditions turn sour. Denis and Denis (1995) confirm that, for a sample of 29 leveraged recapitalizations completed between 1985 and 1988, regulatory developments such as restrictions on investment in high-yield instruments as well as recessions (or industry-wide downturns) strongly and negatively influence the survival probability. For a more recent sample of PE-backed buyouts between 1995 and 2010, however, Wilson and Wright (2013) find that leverage is not a strong predictor of failure, and that PE-backed buyouts are no more prone to financial distress than non-buyouts or other types of MBIs.

[Insert Table 9 about here]

#### *4.3.3. Synthesis: Process*

Table 8 summarizes the main results discussed in this section. We conclude that the 1980s LBO wave triggered considerable operational improvements. The causes of the performance and efficiency improvements were primarily the organizational structure of the leveraged buyout, characterized by high leverage and strong (managerial) ownership concentration. Almost unambiguously, the studies in this strand of the literature support the role of incentive realignment in the post-buyout value creating process, while the employee wealth transfer hypothesis is mostly discarded and the undervaluation hypothesis remains disputed. Evidence from the most recent LBO wave documents only limited performance improvements for US LBOs, although the change in performance seems to depend on the form of the deal: pure MBOs and private-to-private LBOs show performance improvements, whereas PE-backed MBOs were already performing well before the deal and PTP LBOs show no improvements. In contrast to their US counterparts, there is however some evidence that Continental European LBOs show significant increases in operating performance post-buyout. A consistent finding about both the first and the second LBO wave is that deals towards the end of the wave show less value creation, as they are generally riskier and higher priced. Despite popular belief, LBOs are associated with growth in employment and wages, although employment growth is slower relative to industry peers and is less likely to

occur in LBOs with third party involvement (e.g. MBIs and IBOs). In addition, LBO firms tend to invest more in long-term innovation.

#### ***4.4 Fourth strand: Duration***

Jensen (1989) argues that LBO firms constitute a superior organizational form to publicly held firms, due to the better incentives they offer to managers and monitors. Management incentives relating pay to performance, decentralization of control, high leverage and other bonding or pre-commitment agreements, combined with reputational concerns of the LBO sponsors, reduce the agency cost problems inherent to the structure of the public corporation in low-growth industries. Nevertheless, Rappaport (1990:101) contests Jensen's (1989) proclaimed superiority of the LBO organization to public corporations, arguing that the latter are 'vibrant, dynamic institutions - capable of long periods of underperformance, to be sure, but also fully capable of self-correction'. In short, Kaplan (1991) refers to Rappaport's (1990) view of 'going-private as a shock therapy'. After the necessary changes have been brought about under highly leveraged private ownership, the costs of inflexibility, illiquidity and the need for risk diversification will exceed the benefits of the LBO as an organizational form, with a return to public ownership as an inevitable consequence. Clearly, according to this view, the time horizon associated with the phase of being private will generally be shorter than the 'significant period of time' Jensen (1989) deems necessary.

Kaplan (1991) highlights the importance of evidence on LBO-duration in the discussion of the role of PTP transactions, the reasons why they occur, and the sources of wealth gains that motivate going-private transactions. Therefore, this section reviews the empirical work on the duration of private ownership after a PTP transaction.

##### *4.4.1. Methodological issues*

To measure the duration of the private status of a firm (from LBO to secondary IPO), hazard functions - designed to measure the 'survival time' - are estimated. There are two major reasons why duration analysis of LBOs cannot be carried out by straightforward multiple regression

techniques. First, the dependent variable (duration of private status) is most likely not normally distributed (it usually follows an exponential Weibull distribution). Second, there is the problem of censoring. A Cox proportional hazard model is the most general form of the regression models because it is not based on any assumptions concerning the nature and shape of the underlying survival distribution. The model assumes that the underlying hazard *rate* (rather than survival time) is a function of the independent variables (covariates) such that no assumptions are made about the nature or shape of the hazard function. Thus, in a sense, Cox's regression model is a nonparametric method. In order to use a hazard model a minimum of 30 LBO observations is needed, which precludes such an analysis in certain countries. Furthermore, in past Anglo-American studies, the attrition bias is not accounted for in the estimation (some LBO firms go bankrupt after the delisting such that a RLBO is not an option). Therefore, the correct duration of leveraged buyouts is based on the probability of a return to public ownership conditional on survival during the phase under private ownership.

#### *4.4.2. Empirical results*

Kaplan (1991) is the first to formally address LBO duration and finds that companies that return to public ownership do so after a median time under private status of only 2.63 years. For his sample of 183 large going-private transactions from 1979-86, he finds an unconditional median life of 6.82 years for whole-firm and divisional LBOs. Using hazard functions, Kaplan (1991) observes constant duration dependence in years 2 through 5, and negative duration dependence<sup>20</sup> beyond this period. This means that the likelihood of returning to public ownership is largest in years 2 to 5, while this likelihood decreases as time under private ownership increases beyond this period. This result leaves room for both the existence of Rappaport's (1990) arguments about the shock therapy of LBOs, as well as for Jensen's (1989) idea that firms that go private will remain private for longer periods of time due to the advantages of incentive realignment. Consistent with

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<sup>20</sup> Duration dependence is the extent to which the conditional hazard of the event of interest is increasing or decreasing over time (for a general review see Kiefer (1988) or Heckman and Singer (1984)).

Kaplan (1991), Holthausen and Larcker (1996) confirm that LBOs reverting to public ownership retain some of the characteristics they exhibited under private ownership.

Van de Gucht and Moore (1998) also explore the duration of the private status of LBOs, but do not unambiguously support Kaplan's (1991) results. Using a sample of 343 whole-firm and divisional buyouts from 1980-92, they confirm the results found by Kaplan (1991 and 1993) on the median duration of the private status (conditional on the firm reverting back to a public listing). However, when Van de Gucht and Moore employ a split population hazard model that does not implicitly assume that all firms that went private eventually return to public ownership (as Kaplan (1991) does), they document that the likelihood of returning to a listing increases up to the seventh year, but decreases subsequently. Divisional buyouts are found not to be significantly different from whole-firm going-private transactions in terms of their duration. Interestingly, the climate of the financial markets significantly influences the reverting moment.

Wright et al. (1995) investigate the duration that buyouts and buy-ins stay private for a sample of 182 UK firms for 1983-86. This sample includes PTP transactions as well as buyouts of non-listed firms, and both divisional and whole-firm buyouts and buy-ins. This study shows that – in line with the US findings – the hazard coefficient increases strongly from approximately 3 to 6 years after the buyout, after which a negative duration dependence persists. Survivor analysis estimations show that size is a significantly negative determinant of the duration in buyouts.

Quantitative analysis is combined with three case studies in Wright, Robbie, Thompson and Starkey (1994) who investigate the influence of a whole array of management buy-out types on the duration of a firm's private status. Their evidence suggests that ownership, financial and market-related factors are the prime factors explaining the duration of the buyout. Third-party financial institutions are associated with the propensity to exit fairly rapidly after a transaction, as these institutions seek a return within a relatively short pre-established time frame. If the management of the buyout firm owns a relatively small fraction of the equity, it will be not able to extend the private status of the firm for long. Finally, the study documents that

environmental dynamism and competitive pressure are important determinants of buyout longevity.

Halpern et al. (1999) reconcile the contradicting claims by Rappaport (1990) ('going-private as a short-run shock therapy') and Jensen (1989) ('LBO firms constitute a superior organizational form'). The authors state that the probability of remaining private is positively related to managerial shareholdings. A subsample of LBOs (usually poorly performing firms with low managerial shareholdings) remains private only for a short time, consistent with Rappaport's claim. After restructuring the operations after the buyout, these firms become publicly listed again. For another subsample (firms with ex ante high managerial shareholdings), the private status is a more efficient form of organization and hence these firms remain delisted.

Using a sample of over 21,000 global public-to-private and private-to-private LBOs over the period 1970-2007, Stromberg (2007) reports a median holding period of 9 years, supporting Jensen's (1989) claim that the LBO organizational form is an optimal governance structure over the long run. Whereas this holding period is longer than those reported in previous studies, he finds evidence that holding periods increase over time: from 6-7 years in the 1980s to more than 9 years in the 1990s. Interestingly, he finds that LBO firms going public were more likely to be privately-held pre-LBO firms (private-to-private LBOs), whereas most of the public-to-private LBO firms remain private. Consistent with Wright et al. (1994), he finds that LBOs with more PE involvement have shorter holding periods and are more likely to go public.

Cao and Lerner (2009) however report a much shorter duration of 3.46 years before returning to the public market based on a sample of 526 US RLBOs. Moreover, they find that, although returns for RLBOs before 1995 decrease for longer holding periods, quick flips perform even more poorly.

[Insert Table 10 about here]

#### *4.4.3. Synthesis: Duration*

Table 9 gives an overview of the main results of the papers discussed in this section and shows that there is a dichotomy among the firms that go private. Some firms seem to use the

organizational form of a going-private transaction as a temporary shock therapy to enable them to restructure efficiently, while others regard the LBO as a sustainable superior organizational form. The decision to organize a RLBO (or a secondary initial public offering) depends both on firm-specific characteristics and environmental factors. However, privately owned holding periods in the second LBO boom increased relative to the 1980s wave, providing support for the sustainable organization form theory of private ownership.

## **5. International public-to-private trends**

An abundant body of empirical literature has documented the drivers of waves in M&A activity (see e.g., Maksimovic, Phillips, and Yang (2013), Martynova and Renneboog (2008a, 2011b), Andrade, Mitchell, and Stafford (2001), Auster and Sirower (2002) and Golbe and White (1993)). Likewise, LBO activity seems to occur in cycles (Smit and Van Den Berg (2006)) and the following two factors seem to be the main determinants. First, the opportunities for value creation from PTP deals vary over time, which determines the demand for private-equity capital. Second, the extent to which the supply of PE capital can meet this demand depends on the economics of the PE model in a given region or market (Fenn et al. (1995)). The economics are determined by e.g. the political economy and the general acceptance of LBOs as financial transactions, the capital market conditions, and the legal/fiscal infrastructure. In this section, the occurrence of the LBO waves in the 1980s and 2000s is explained by the arguments based on the supply and demand for private-equity capital made above<sup>21</sup>. Figures 2, 3 and 4 show the evolution of PTP volumes and values for the period 1980-2016 for the US, the UK and Continental Europe.

[Insert Figures 2, 3 and 4 about here]

### ***5.1 The LBO wave of the 1980s***

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<sup>21</sup> Jensen (1991) and Fenn et al. (1995) provide an inclusive account of the US 1980s LBO wave only, while Holmstrom and Kaplan (2001) and Jin and Wang (2002) report on the 1980s and 1990s. Wright et al. (2006) discuss the UK and Continental European buyout market, and Stromberg (2007) provides an overview of the global LBO market from the 1970s to the 2000s.



The US economy of the 1980s was characterized by a large number of (hostile) corporate takeovers and restructuring. Mitchell and Mulherin (1996) argue that 57% of US quoted firms were takeover targets or were restructured between 1982 and 1989. As some mergers failed and substantial excess capacity was created, the M&A wave also triggered a significant increase in LBO activity. Going private transactions facilitated the reduction in excess capacity that ‘complacent corporate America’ was unable to solve itself (Jensen (1991)). This alludes to agency cost-related explanations of wealth gains from LBOs.

Shleifer and Vishny (1990) argue that LBOs enabled the deregulation and resulting deconglomeration of the large corporate groups created in the 1960s and 1970s. The development of the high-yield or junk bond market by Drexel Burnham Lambert’s Michael Milken<sup>22</sup> improved access to acquisition finance to pursue these going-private transactions (for a review see Yago (1990) and Kelley and Scott (1993)). In addition, hostile going-private transactions were facilitated by the 1982 Supreme Court reduction of state anti-takeover laws (as pointed out by Pound (1987), Jarrell and Poulsen (1987), or Jarrell (1992)). As a result, many of these transactions were also motivated by the takeover defense hypothesis as described above.

In the first half of the 1980s, LBOs performed their role of catalyzing corporate restructuring so well that Jensen (1989) predicted the eclipse of the public corporation. However, the culmination of the LBO wave in the second half of the 1980s was associated with many bankruptcies (see Kaplan and Stein (1993) and Jensen (1991)) and evoked fierce public and political resistance (Shleifer and Vishny (1991)). The LBO wave of the 1980s dried up as a consequence of the resulting re-enactment of state anti-takeover legislation<sup>23</sup>, the political

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<sup>22</sup> For an account of Drexel’s role in the rise and fall of the LBO market in the second half of the 1980s, see e.g., Scott (2000).

<sup>23</sup> Most influential was the re-enactment of the Delaware Merger Moratorium Law, prohibiting hostile suitors from merging their acquisition vehicle with the target company for at least three years after acquiring a majority stake lower than 85%. As a result of the re-enactment, corporations sought to place 15% of common shares with befriended parties to fend off hostile suitors. The re-enactment of this law is important, because the majority of US medium-large companies is incorporated in Delaware (see Jarrell (1992) for a detailed account).

pressure against high leverage<sup>24</sup>, the crisis in the high yield bond market<sup>25</sup>, and a credit crunch (see Holmstrom and Kaplan (2001) and Jensen (1991) for a review).

The phenomenon of PTP transactions quickly traversed the Atlantic, with the first UK MBO (Haden Maclellan Holdings Plc) being undertaken in 1985. Although smaller in scale, the activity in the UK going-private market kept pace with that of the US and the first wave also peaked in 1989. Wealth gains from LBOs in the 1980s in the UK appear similar to those in the US. Public controversy<sup>26</sup> about the increased hostility in going-private transactions induced the Takeover Panel<sup>27</sup> to adopt new rules regulating the behavior and procedures in going-private transactions (Wright, Thompson, Chiplin and Robbie (1991)). The drop in deals after 1989 made it seem as if the going-private transaction had already outlived its short life. The 1980s LBO wave was primarily a US/UK phenomenon; PTP transactions on the European Continent during the 1980s were virtually inexistent in that period.

## ***5.2 The LBO wave of the 2000s***

### *5.2.1. Anglo-American trends: US and UK*

Although favorable conditions (with the exception of the anti-takeover measures) were restored in the US in the early 1990s, going-private activity did not take off. Kaplan (1997) and Holmstrom and Kaplan (2001) argue that the 1980s-style deals were not necessary anymore. The reason is that, on the whole, corporations themselves seem to have reduced the agency costs between shareholders and managers by realigning managerial incentives and strengthening shareholder control. The subsequent declined rate of hostility (Holmstrom and Kaplan (2001)) had also

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<sup>24</sup> For example, the regulator restricted investment by insurance companies and savings & loans institutions in commercial bonds and junk bonds to LBOs (Holmstrom and Kaplan (2001)). Scott (2000) even claims that Michael Milken became a “political prisoner” as a result of envy and political backlash against the high yield bond market.

<sup>25</sup> The crisis in the junk bond market was largely due to the limitations imposed on Drexel Burnham Lambert according to Jensen (1991).

<sup>26</sup> Part of the controversy stemmed from two hostile MBOs in 1989 which were among the first acts of hostility in the UK public-to-private market. In particular, it was the £ 629 million Magnet Plc deal that was unacceptable to investors. Institutional investors took the lead in the public protest against the MBO attempt of the Magnet management team, which was accused of depriving shareholders of the chance to invest over the long term.

<sup>27</sup> The Panel on Takeovers and Mergers (“the Takeover Panel”) is the regulatory body which administers the City Code on Takeovers and Mergers (“The Code”). Its primary objective is to ensure equality of treatment and opportunity for all shareholders in takeover bids (see [www.thetakeoverpanel.org.uk](http://www.thetakeoverpanel.org.uk)).

reduced the scope of MBOs as a defensive mechanism and the recession of the early 1990s brought whatever LBO activity that was left to an end, as many deals then defaulted (Guo et al., 2011). The most important sources of wealth gains of US LBOs from the 1980s appeared to be no longer available.

However, going-private activity reached a new peak in the 2000s, raising questions about the mechanisms of value creation during this period. Shivdasani and Wang (2011) find that, from 2004 to 2007, \$535 billion in LBOs were completed in the US, vastly exceeding the \$227 billion in the first LBO wave in the 1980s. However, whereas transactions in the first buyout wave involved mostly large firms in mature industries, the bulk of buyouts in the second LBO wave was made of mid-cycle private firms in new and growing industries. Nevertheless, going-private transactions still made up 34% of transaction values in the 2000s wave, relative to 9% in the early 1990s (Kaplan and Stromberg, 2009). The second LBO wave was mainly fueled by growth in the securitization markets, providing easier and cheaper access to deal financing. With the collapse of the collateralized debt obligation (CDO) markets, however, LBO volume dropped by 94% in the last quarter of 2007. Block (2004) surveys 40% of the firms going private over the period 2001 to 2003 and finds that the main reasons for going private are: (i) pressure by the market on top management to increase corporate performance, (ii) lack of analyst coverage and market liquidity, and (iii) the threat of being delisted by Nasdaq. This is supported by Mehran and Peristiani (2010) who find that lack of financial visibility and of interest by analysts as well as institutional investors was the primary reason for young IPO firms to go private between 1990 and 2007. In addition, the implementation of the Sarbanes-Oxley Act substantially increased the costs of a listing (e.g. Coustan, Leinicke, Rexford, and Ostrosky (2004), Perino (2004), Ribstein (2003)). This additional regulatory burden has a fixed cost component that falls disproportionately onto the smaller quoted companies (Holmstrom and Kaplan (1993) and Engel et al. (2007)). This rise in the costs of a stock listing and the likely inability to reap the benefits from a public listing appears to be the main reason for small US companies to go private starting with the late 1990s (Engel et al. (2007), Carney (2006), Kamar, Karaca-Mandic, and Talley (2009), and Mehran and Peristiani (2010)). This provides strong support for the transaction cost hypothesis of wealth gains for LBOs. Guo et

al. (2011) compare the first and second LBO waves and find that, despite being less levered than deals in the 1980s wave, deals in the second wave face still substantial default risk. They are also characterized by more conservative pricing, multiple PE partners, and considerable asset restructuring. As in the US, financial backers in the UK were equally unprepared to take any risks from 1991 to 1996, which resulted in a dormant PTP market. Nevertheless, Figure 3 shows that a new wave of going-private transactions started in 1998. The LBO market from 1998 to 2003 was characterized by many small firms going private, indicated by the high peak in the number of going-private deals, but the relatively small peak in deal value. This suggests that, as shown for the US by Mehran and Peristiani (2010), the first half of the second LBO wave consisted of young IPO firms going private. Although the number of deals did not exceed that in the first half the 2000s, going-private transactions attained unprecedented values from 2003 to 2007: the deals in the year 2006 alone reached a total value of \$45 billion. As in the US markets however, the crash of the securitized debt market at the end of 2007 also meant the end of the second LBO wave in the UK.

Explanations for the second going-private wave at the end of the 1990s generally emphasize the access to cheap debt financing driven by growth in the CDO markets (Shivdasani and Wang, 2011). Other explanations are the increased confidence of private-equity and debt financiers in important issues such as access to key information, the quality of due diligence, management support, target shareholder support (e.g. through irrevocable undertakings) and the expectation that 100% of the shares can be acquired (e.g. through squeeze-out provisions<sup>28</sup>) (CMBOR (2002) and Ashurst, Morris and Crisp (2002)). Also, innovative techniques such as inducement fees and ‘hard’ exclusivity agreements have facilitated the reduction of risks in going-private transactions (Davis and Day (1998)). Arguably, these changes have improved the economics of the private-equity model substantially.

As to the demand for private-equity capital, anecdotal evidence suggests that the UK LBO wave of the late 1990s was triggered primarily by (temporary) undervaluation, which led to increased wealth gains in LBOs. Especially small firms turned to private equity as institutional investors disregarded such small firms (Weir et al. (2005b: 949)). The consolidation in the fund

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<sup>28</sup> A squeeze-out is described in section 429 of the UK Companies Act as follows: when 90% of the shares to which the takeover relates are acquired, the rest can be compulsory acquired.

management industry<sup>29</sup>, with bigger funds requiring greater minimum investment and free float, is frequently mentioned as a reason for this institutional disinterest in small companies (Financial Times, Sept. 17, 1999 and CMBOR (2002)). For example, upon going private, Mr. Ainscough, CEO of Wainhomes Plc, said: “We feel unloved and unwanted. There has been a lack of investor appetite for small company shares over the last two or three years. This made it difficult to fund expansions and acquisitions through the issue of new shares, which is one of the main reasons for going public in the first place” (Financial Times, March 4, 1999). The lack of liquidity and the need for expansion capital as a consequence of the limited availability of institutional equity finance depressed stock prices and drove small companies into the arms of private-equity firms to obtain funding (Financial Times, June 11, 2003).

The year 2007 was the year of the largest UK PTP deal to date, when Alliance Boots went private through a £11.1 billion LBO. With the start of the financial crisis at the end of 2007, however, going-private activity dwindled and virtually disappeared in the UK. Despite PE-backed LBO activity having recovered by the late 2000s back to levels comparable to those in the late 1990s, macroeconomic uncertainties such as the Brexit limited UK LBO activity because proposed LBOs were aborted and UK banks pulled out of bigger deals (Wright, Wilson, Gilligan, Bacon, and Amess (2016)).

### ***5.2.2 Continental Europe trends***

Although the first LBO wave was mainly apparent in the US, Canada, and the UK, the second LBO boom in the mid-2000s also spilled over to Continental Europe. The increase in LBO activity in Continental Europe at the end of the 1990s and beginning of the 2000s is induced by various institutional and regulatory changes, which we discuss below. Figure 4 shows that European LBO activity in the second half of the 2000s follows patterns similar to those in the Anglo-American markets: going-private transactions reached a peak in terms of deal numbers and value in 2006, but substantially decreased with the start of the financial crisis in 2007. Since the demise of the CDO markets in 2007, LBO activity in the US, UK, and Europe has remained at

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<sup>29</sup> Consolidation in the fund management industry is largely the result of decreasing margins and the emergence of the Eurozone with one common currency (Pye (2006)).

relatively low levels. It is remarkable that, whereas European going private activity substantially lagged behind that of the US and UK (Wright et al. (2006) and CMBOR (2002)) until the beginning of the 2000s, Stromberg (2007) reports that non-US PE activity has since outgrown that in the US, with activity in Continental Europe being particularly strong.<sup>30</sup> However, LBO activity outside of North America and Western Europe remains relatively weak even in the early 2000s, accounting for only 13% of global LBO transactions in numerical terms and 7% in value terms.

What financial, economic, and regulatory changes induced the increase in LBO activity in Continental Europe at the beginning of the 2000s? First, Continental Europe's public capital markets were historically underdeveloped relative to the UK. One consequence is that a larger fraction of economic activity is privately financed, which reduces the number of potential targets and hence the scope of PTP transactions in corporate restructuring. In addition, public bond markets for small and mid-sized companies are virtually absent (Andres et al. (2006), Martynova and Renneboog (2009)), as are (junk) bond markets as a source of finance in LBOs. Sponsors therefore largely rely on banks for financing and experience less financial flexibility when arranging an LBO. However, Boucly et al. (2011) suggest that, in countries where capital and credit markets are not as developed as in the US and the UK, LBOs can provide new sources of value creation by helping relax targets' credit constraints, thereby allowing them to grow faster. Using a sample of 839 French LBO deals from 1994 to 2004, they find that LBOs lead to large increases in the target's profitability, but also that these improvements are concentrated in private-to-private transactions. This suggests that the conflicting findings in terms of value creation in the second LBO wave in US studies relative to European studies are due to the potential for Continental European buyouts to improve performance by relaxing targets' credit constraints. In addition, the emergence of new debt instruments in Europe such as second-lien bonds (whose claims are subordinate to more senior obligations) and loans with fewer covenant limitations and more attractive rates and maturities further facilitated LBO finance (Wright et al. (2006)). More

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<sup>30</sup> These numbers include all types of LBO deals and not only public-to-private deals which have been the primary focus in earlier research.

recently however, the emergence of new funding techniques and the financial crisis starting in 2008 have led policy makers to focus on more restrictive regulations regarding PE and fund investment (Ferran (2011)).

Second, a survey by CMBOR (2002) indicates that some Continental European countries lack the legal provisions to limit the risk of taking a public company private. With greater uncertainty and risk, fewer private-equity houses are prepared to back PTP transactions. This lack of an LBO infrastructure leads to lower levels of activity. For example, the high percentage of tendered shares necessary to take a corporation private has been an obstacle in many European countries, while UK private-equity investors avidly make use of squeeze-out provisions (CMBOR (2002)). Nevertheless, since 2000, many European countries have introduced changes favorable for LBO activity (Goergen, Martynova and Renneboog (2005); Martynova and Renneboog (2011a and 2013)). For instance, the transparency, shareholder protection, takeover rules and development of risk capital as provided for in Italy's 1998 Company Law reform allowed for more flexibility in structuring private-equity deals and provides more reassurance to Italian going-private transactions (Ulissi (2000), Lovells (2003)). Similarly, the 2002 German Takeover Act provided a set of mandatory<sup>31</sup> rules that govern the time schedule of a going-private bid, guarantee the equal treatment of all shareholders of the same class, limit prolonged resistance by the target managing board, and introduce a squeeze-out rule at 95% of the equity (Goergen et al. (2005)).

Third, fiscal regimes in some countries in Continental Europe were deemed "unhelpful" to enable PTP transactions by the CMBOR (2002) survey. For example, in Switzerland, the interest on leveraged buyouts cannot be offset against the company's earnings, and tax deductions are not possible in France if the 95% level of tendered shares is not achieved. But Continental European countries are looking more favorably at LBOs. The German tax reform eliminated the corporate capital gains tax on the disposal of shares, facilitated the sale of blocks of shares of listed firms to private-equity investors (Ashurst et al. (2002)). The French Minister of the

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<sup>31</sup> Before the act was implemented, the adoption of takeover rules by the companies was voluntary rather than mandatory.

Economy declared that the French usury law<sup>32</sup> does not apply to corporate bonds, high yield issues, or debt instruments (Fried and Frank (2003)). This has eliminated the need for French borrowers in LBO transactions to set up new companies in jurisdictions other than France. In the Netherlands, the Dutch Fiscal Unity law of January 1, 2003, enabled acquisition vehicles of private-equity investors to allocate the losses of high interest payments from acquisition-related leverage to the operations of the target. In Italy, LBOs were even prohibited until a law reform in 2004 rendered LBOs legal again. The frequency of LBOs indeed substantially increased after the 2004 regulatory change, and the allocation of cash flow and control rights was less efficient during the period of illegality and the returns to PE transactions were then lower (Cumming and Zambelli (2010, 2013)).

Fourth, the “culture” on the European Continent has historically been less favorable to LBOs. Especially in Mediterranean economies, family companies with a stock listing are a great source of pride and their management teams may not even consider going private, even if necessary (CMBOR (2002)). While in 2006, the chairman of the German Social Democratic party compared foreign private-equity firms to “swarms of locusts sucking the substance” from German companies, Continental Europe’s managerial attitude towards performing PTPs has improved over recent years (Wright et al. (2006)).

## **6. Conclusion**

Overall, although some studies focus on non-Anglo-American countries (e.g. Boucly et al. (2011) for France, Bergstrom et al. (2007) for Sweden, and Stromberg (2007) using a global sample), systematic research on the sources of wealth and post-buyout performance in going-private transactions for countries other than the US and the UK is still limited. The findings from these studies however do suggest that what is currently known about going-private transactions based on US samples cannot always be generalized to, for example, Continental European LBOs.

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<sup>32</sup> The French usury law required (prior to January 2, 2003) lenders to disclose the effective global rate of a facility in place. This rate reflects the actual cost of borrowing for the borrower. If this rate exceeds the average interest rate on investments with similar risk by a third, it is a usurious rate, and a penalty will follow to at least repay the interest paid in excess by the borrower (see Lovells (2003)).



There are compelling reasons why the lessons drawn from US LBO research cannot entirely be extrapolated to UK and Continental European PTP transactions. First, the nature and extent of debt financing in US PTP transactions differ substantially compared to UK/European deals (Toms and Wright (2004)). Whereas US deals of the 1980s were primarily financed with junk bonds, mezzanine was and still is the standard in the UK and Continental Europe.<sup>33</sup> Since these two sources of funds have different characteristics (in terms of flexibility, interest rates, maturity, and covenants), it is not unlikely that the financing choice will influence the incentive mechanisms in all phases of a going-private transaction. In addition, the debt levels associated with UK transactions are generally lower than those of US deals. Hence, UK LBO research cannot always be extrapolated to Continental European LBO deals. Continental Europe's public capital markets were historically underdeveloped relative to the UK, resulting in relatively more private financing, which reduces the financial flexibility when arranging an LBO and hence the scope of potential PTP transactions. In addition, public bond markets as a source of finance in LBOs are virtually absent (Andres et al. (2006), Martynova and Renneboog (2009)), such that investors largely have to rely on bank financing. However, in countries where capital and credit markets are not as developed as in the US and the UK, LBOs can provide new sources of value creation by helping relax targets' credit constraints (Boucly et al. (2011)).

Second, tax benefits have been proven to be an important source of wealth gains in US transactions in the 1980s, have become less important in the second LBO wave of the 1990s, and their importance has further declined under UK tax law. In Continental Europe, however, favorable fiscal regime changes since 2000 in for example Germany, France, the Netherlands, and Italy may have had a considerable effect on the wealth gains in LBOs (but few studies have investigated the effects of these fiscal changes on returns in LBOs).

Third, in the US market for corporate control, far more hostile approaches occur. The UK going-private wave of the late 1990s exhibits a hostility rate of merely 7.3% (Renneboog et al. (2007)). This discrepancy undoubtedly affects the bidding process for firms going private, and illustrates that the takeover defense hypothesis should not be expected to hold for the UK and

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<sup>33</sup> A limited number of transactions in the UK have been financed with junk bonds.

Continental Europe. Moreover, management teams of family-controlled companies in Continental Europe often refuse going private, as family companies with a public listing may be a source of pride.

Fourth, venture capital and buyout markets in the UK and Continental Europe have traditionally been more closely linked than those in the US. Thus, the UK going-private activity has focused on growth opportunities, whereas US LBOs have occurred more frequently in mature, cash-rich industries.

Finally, the UK and Continental European markets for corporate control are organized and regulated differently than the US ones. Whereas US state regulation has effectively been able to regulate more stringently unsolicited takeover activity, the UK system has preferred self-regulation, thereby favoring the unrestricted functioning of market forces (Miller (2000: 534), Ferrarini and Miller (2009), Calcagno and Falconieri (2014)).<sup>34</sup>

These differences in corporate governance regulation influence the sources of wealth creation through going-private transactions. Moreover, the subtle idiosyncrasies in financial practices and culture on either side of the Atlantic further reduce the generalizability of US-based results to the UK/Continental European situation. This implies that there is a strong need for further systematic and multi-country research on the second leveraged buyout wave.

We propose some questions that may be addressed in a future research agenda. First, future research should analyse the types of company that go private. Given that the level and volatility of cash flows varies across companies, an analysis of how to structure the capital by type of firm across different types of debt (including convertible debt), and (preferred) equity while balancing the size of tax shield and distress risk is interesting.

Second, future research should estimate and analyze the wealth effects for shareholders and especially for bondholders in PTP transactions and investigate why (if at all) these wealth effects differ across corporate governance regimes. In addition, other stakeholders such as suppliers or employees may be affected differently by country-level governance and labour regulations. Multi-country studies should take into account these cross-country differences when investigating the wealth effects of LBOs.

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<sup>34</sup> For an overview of the developments of European takeover regulation: see Goergen, Martynova and Renneboog (2005) and Martynova and Renneboog (2011).

Third, the process of the realization of wealth creation once the firm has been taken private should also attract research interest, as little is known about that LBO stage in particular, apart from the fact that working capital management can create much additional value. With the growing availability of data on private firms, future research should be able to address this issue.

Fourth, future research should address the duration and its determinants of the private status of formerly public firms. Special attention could then be given to international comparisons and the role of going private as a corporate restructuring device in a multi-country setting, as the majority of research has focused on US samples. Moreover, country-specific regulations may considerably affect the duration of LBO firms' private status.

Fifth, with exception of Mao and Renneboog (2015) there is little non-US research on earnings manipulation in firms prior to a leveraged buyout. The incentives to manipulate earnings may differ between MBOs and IBOs, across firms with various levels of financial constraints, or they may affect the likelihood of the firm becoming publicly listed again.

Sixth, most of our knowledge about LBOs is confined to public-to-private transactions. However, the increased data availability on private-to-private deals calls for additional research on this type of LBO transactions. A growing strand of literature focuses on private-to-private transactions, but systematic, multi-country studies are still limited.

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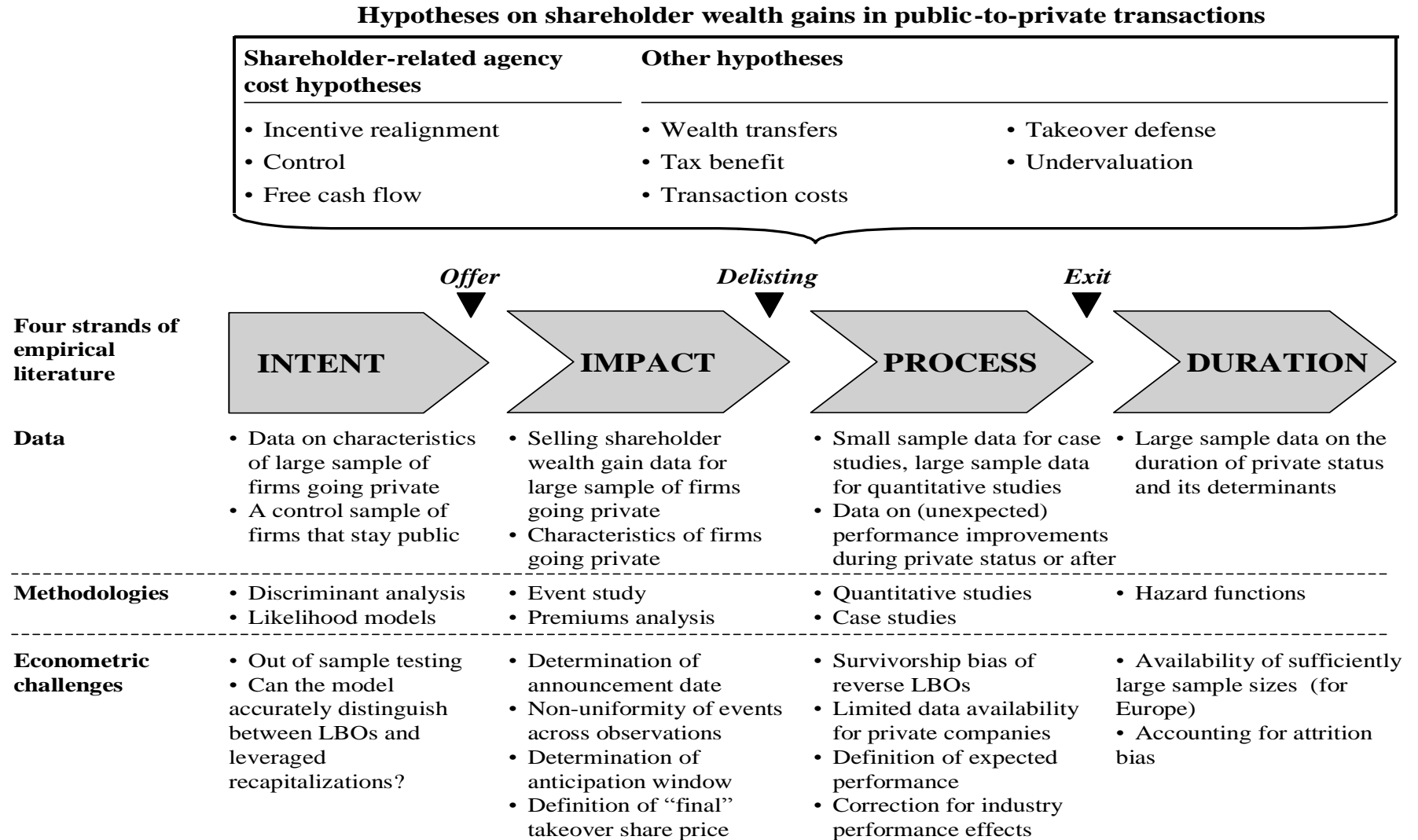
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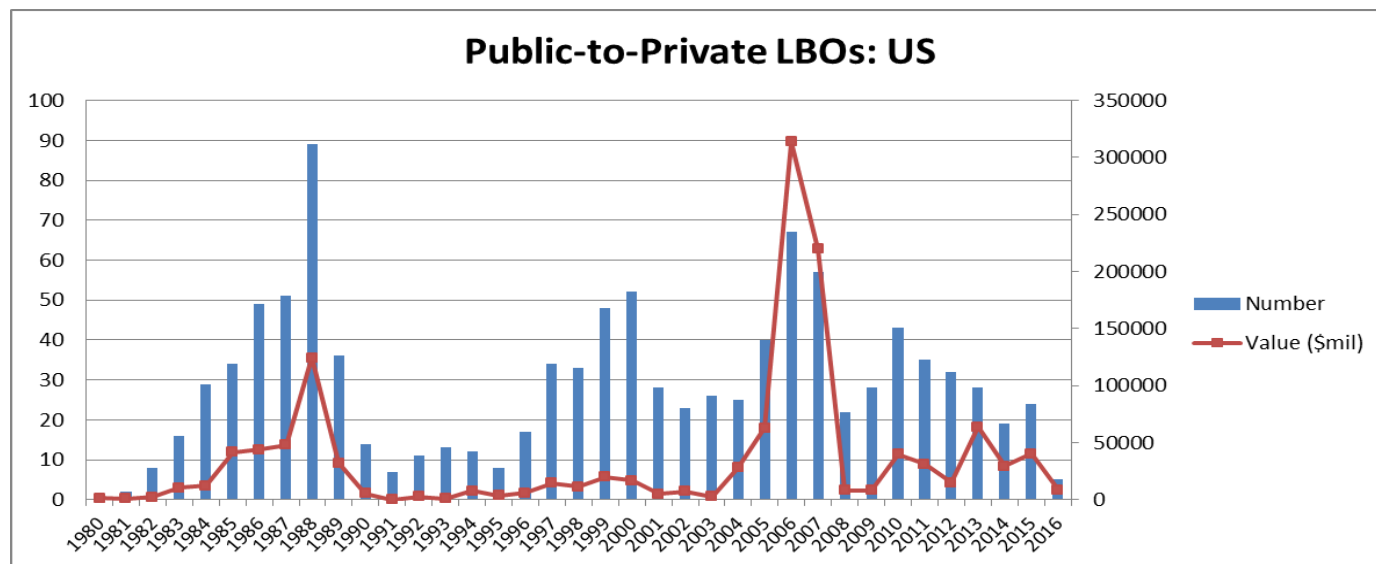
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Figure 1: The theoretical framework on the public-to-private literature



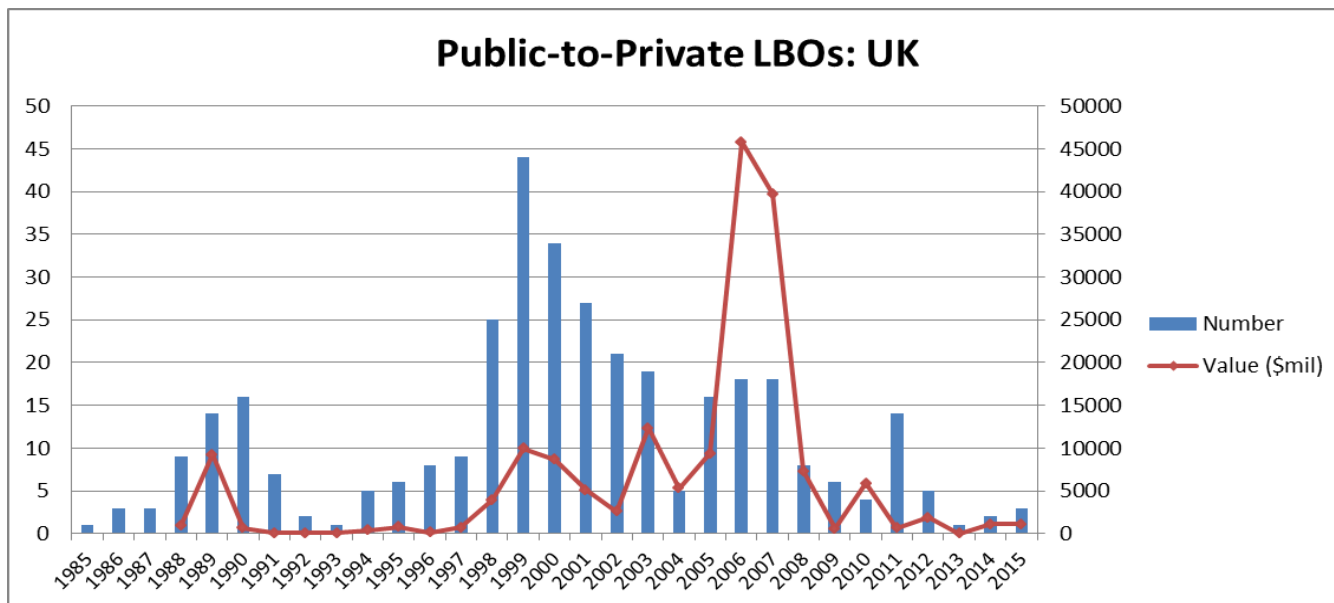
**Figure 2: US public-to-private activity**

This figure shows the number of public-to-private transactions (left hand scale) and the value in million USD (right hand scale). Source: SDC Global Platinum and own calculations.



**Figure 3: UK public-to-private activity**

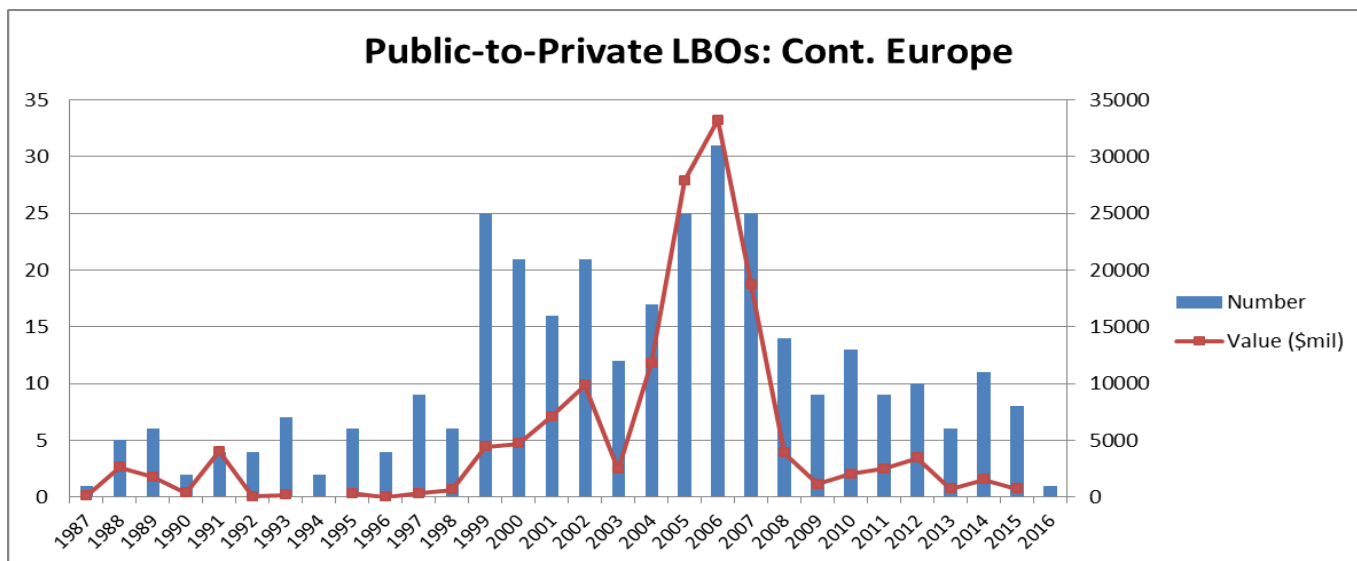
This figure shows the number of public-to-private transactions (left hand scale) and the value in million USD (right hand scale). Source: SDC Global Platinum and own calculations.





**Figure 4: Continental European public-to-private activity**

This figure shows the number of public-to-private transactions (left hand scale) and the value in million USD (right hand scale). Source: SDC Global Platinum and own calculations.



**Table 1: Summary of definitions of public-to-private terms**

<b>Term</b>	<b>Definition</b>
LBO	Leveraged buyout. An acquisition whereby a non-strategic bidder acquires a listed or non-listed company, utilizing funds containing a proportion of debt substantially beyond the industry average. In case the acquired company is listed, it is subsequently delisted and remains private for a short to medium period of time
MBO	Management buyout. An LBO in which the target company's existing management bids for the control of the firm, often supported by a third-party private-equity investor
MBI	Management buyin. An LBO in which an outside management team acquires (often backed by a third-party private-equity investor) a company and replaces the incumbent management team
BIMBO	Buyin management buyout. An LBO in which the bidding team comprises members of the incumbent management team and externally-hired managers, often alongside a third-party private-equity investor
IBO	Institutional buyin. An LBO in which an institutional investor or private-equity house acquires a company. Incumbent management can be retained and may be rewarded with equity participations
RLBO	Reverse LBO. A transaction in which a firm that was previously taken private reobtains public status through a secondary initial public offering (SIPO)

**Table 2: The bondholder wealth effects in public-to-private transactions**

This table shows the estimated bondholder losses of the total public debt. Losses are calculated using an event study methodology. The benchmark returns used in the market models is specified. N is the number of different bonds that were used in the analysis (some were issued by the same company). \*\*\*, \*\*, \* stand for significance at the 1, 5 and 10% level, respectively.

Study	Sample period/ country	Obs.	Deal Type	Event window	Loss/ Gain to bondholders	Benchmark
Marais, Schipper and Smith (1989)	1974-85 US	33	ALL	[-69,0] days	0.00%	Dow Jones Bond index
Asquith and Wizman (1990)	1980-88 US	199	ALL	[0,1] month	-1.1%**	Shearson-Lehman-Hutton bond index
Cook, Easterwood and Martin (1992)	1981-89 US	62	MBO	[0,1] month	-2.56%**	Shearson-Lehman-Hutton bond index
Travlos and Cornett (1993)	1975-83 US	10	ALL	[-1,0] days	-1.08%*	CRSP equally weighted index.
Warga and Welch (1993)	1985-1989 US	36	ALL	[-2,2] months	-5.00%**	Rating and maturity weighted Lehman Bond Index
Billett, Jiang and Lie (2010)	1991-2006 US	39	ALL	[-1,0] months	-6.76%***	Rating and maturity weighted Lehman Bond Index
		(without covenant protection) 10			+2.30%	
		(with covenant protection)				

**Table 3: Overview of hypotheses on wealth gains from public-to-private transactions**

<b>Hypothesis</b>	<b>Description</b>	<b>Source of theory underlying the hypothesis</b>
Incentive re-alignment	<i>Shareholder wealth gains from going private result from a system of incentives providing higher rewards for managers acting in line with the investors' interests.</i>	Smith (1776) Berle and Means (1932) Jensen and Meckling (1976)
Free cash flow	<i>Shareholder wealth gains from going private result from debt-induced mechanisms forcing managers to pay out free cash flows</i>	Jensen and Meckling (1976)
Control	<i>Shareholder wealth gains from going private result from an improved monitoring system imposed on the management team</i>	Grossman and Hart (1988) Easterbrook and Fischel (1983) DeAngelo et al. (1984)
Wealth transfers	<i>Shareholder wealth gains from going private result from the expropriation of pre-transaction bondholders, employees, or other stakeholders</i>	Weinstein (1983) Shleifer and Summers (1988)
Tax benefit	<i>Shareholder wealth gains from going private result from tax benefits brought about by the financial structure underlying the transaction</i>	Lowenstein (1985) Kaplan (1989b)
Transaction costs	<i>Shareholder wealth gains from going private result from the elimination of the direct and indirect costs associated with a listing on the stock exchange</i>	DeAngelo et al. (1984) Mehran and Peristiani (2010)
Takeover defence	<i>Shareholder wealth gains from going private result from the management team's willingness to pay a premium to buy out other shareholders in order to retain control</i>	Michel and Shaked (1986).
Undervaluation	<i>Shareholder wealth gains from going private result from the fact that the assets are undervalued (in the eyes of the acquiring party)</i>	Ross (1977) Kieschnick (1987) Lehn, Netter and Poulsen (1990) Fischer and Louis (2008)

**Table 4: Summary of previous empirical results for the first strand of literature: Intent**

This table shows the studies that refer to strand 1 of public-to-private research. Yes = supportive, No = unsupportive, Inconcl. = inconclusive.  
Transaction type refers to which types of deals were considered in the paper: ALL = all going private deals. MBO = MBO deals only

Study	Sample period/ country	Obs.	Transaction type	Econometric technique	Tax	Incentive realignment	Control	Free cash flow	Wealth transfer	Transaction costs	Takeover defence	Under- valuation
Maupin, Bidwell and Ortegren (1984)	1972-83 US	63	MBO	Discriminant analysis	-	No	-	No	-	-	-	Yes
Lehn and Poulsen (1989)	1981-85 US	102	ALL	Logistic regressions	No	-	-	Yes	-	-	Inconcl.	No
Kieschnick (1989)	1980-87 US	263	MBO	Logistic regressions	No	-	-	No	-	No	-	Yes
Kieschnick (1998)	1980-87 US	263	ALL	Logistic regressions	Yes	-	-	No	-	-	Yes	No
Ippolito and James (1992)	1980-87 US	169	ALL	Logistic regressions	-	-	-	Inconcl	Inconcl	-	-	-
Opler and Titman (1993)	1980-90 US	180	ALL	Logistic regressions	No	-	-	Yes	-	-	-	-
Halpern, Kieschnick and Rotenberg (1999)	1981-85 US	126	ALL	Multinomial Logistic regr.	Yes	No	-	No	-	-	Yes	-
Kosedag and Lane (2002)	1980-96 US	21	ALL	Logistic regressions	Yes	-	-	No	-	-	-	-
Weir, Laing, Wright and Burrows (2004)	1998-01 UK	117	ALL	Logistic regressions	-	Inconcl.	No	No	-	-	-	-
Weir, Laing and Wright (2005a)	1998-00 UK	95	ALL	Logistic regressions	No	Yes	Yes	No	-	-	No	-
Weir, Laing and Wright (2005b)	1998-00 UK	84	ALL	Logistic regressions	No	Yes	Yes	No	-	-	No	Yes

Table 4 continued

Study	Sample period/ country	Obs.	Transaction type	Econometric technique	Tax	Incentive realignment	Control	Free cash flow	Wealth transfer	Transaction costs	Takeover defence	Under-valuation
Billett, Jiang and Lie (2010)	1980-06 US	562	ALL	Logistic regression	-	-	-	Yes	Yes	-	-	Yes
Mehran and Peristiani (2010)	1990-07 US	169	ALL	Hazard model	No	-	-	Yes	Yes	Yes	-	No
Bharath and Dittmar (2010)	1980-04 US	1,377	ALL	Hazard model	-	-	-	Yes	-	Yes	-	Yes
Fidrmuc, Roosenboom, and Dijk (2013)	1997-03 UK	33 37	Pure MBOs PE MBOs	Multinomial logit model	No No	- -	- -	Yes No	- -	No No	Yes Yes	Yes Yes

**Table 5: Cumulative average abnormal returns in event studies of public-to-private transactions**

This table shows all papers that estimate the shareholder wealth effects using event study analysis.

\*\*\*, \*\*, \* stand for statistical significant at the 1, 5 and 10% level, respectively.

ALL = all going private deals. MBO = MBO deals only

Study	Sample period/ country	Type of Deal	Event window	Obs.	CAAR
DeAngelo, DeAngelo and Rice (1984)	1973-80	ALL	-1,0 days	72	22.27%***
	US		-10,10 days	72	28.05%***
Torabzadeh and Bertin (1987)	1982-85	ALL	-1,0 months	48	18.64%***
	US		-1,1 months	48	20.57%***
Lehn and Poulsen (1989)	1980-87	ALL	-1,1 days	244	16.30%***
	US		-10,10 days	244	19.90%***
Amihud (1989)	1983-86	MBO	-20,0 days	15	19.60%***
Kaplan (1989a)	1980-85	MBO	-40,60 days	76	26.00%***
	US				
Marais, Schipper and Smith (1989)	1974-85	ALL	0,1 days	80	13.00%***
	US		-69,1 days	80	22.00%***
Slovin, Sushka and Bendeck (1991)	1980-88	ALL	-1,0 days	128	17.35%***
	US		-15,15 days	128	24.86%***
Lee (1992)	1973-89	MBO	-1,0 days	114	14.90%***
	US		-69, 0 days	114	22.40%***
Frankfurter and Gunay (1992)	1979-84	MBO	-50,50 days	110	27.32%***
	US		-1,0 days	110	17.24%***
Travlos and Cornett (1993)	1975-83	ALL	-1,0 days	56	16.20%***
	US		-10,10 days	56	19.24%***
Lee, Rosenstein, Rangan and Davidson (1992)	1983-89	MBO	-1,0 days	50	17.84%***
	US		-5,0 days	50	20.96%***
Van de Gucht and Moore (1998)	1980-92	ALL	-1, 1 days	187	15.60%***
	US		-10,10 days	187	20.20%***
Goh, Gombola, Liu and Chou (2002)	1980-96	ALL	-20,1 days	323	21.31%***
	US		0,1 days	323	12.68%***
Andres, Betzer, and Hoffmann (2003)	1996-02	ALL	-1,1 days	99	15.78%***
	EU		-15,15 days	99	21.89%***
Renneboog, Simons and Wright (2007)	1997-03	ALL	-1,0 days	177	22.68%***
	UK		-5,5 days	177	25.53%***
			-40,40 days	177	29.28%***
Billett, Jiang and Lie (2010)	1980-1990	ALL	-60, 3 days	195	28.74%
	1991-2006			212	24.13%
Brown, Fee and Thomas (2009)	1980-2001	ALL	-1,1 days	352	18.58%***
	US				
Officer, Ozbas, and Sensoy (2010)	1984-2007	ALL (club)	-1,1 days	70	11.45%
	US	ALL (sole)		128	18.26%
Fidrmuc, Palandri, Roosenboom, and van Dijk (2013)	1997-2003	Pure MBO	-1,1 days	33	21.04%
	UK	PE MBO		37	19.30%



**Table 6: Premiums paid above market price to take a firm private**

This table shows all papers that estimate the shareholder wealth effects of going private through premiums analysis. The results are not independent due to partially overlapping samples.

\*\*\*, \*\*, \* stand for statistical significant at the 1, 5 and 10% level, respectively.

ALL = all going private deals. MBO = MBO deals only.

Study	Sample period/ Country	Type of deal	Anticipation Window	Obs.	Mean Premium offered
DeAngelo, DeAngelo and Rice (1984)	1973-80 US	ALL	40 days	72	56.3%
Lowenstein (1985)	1979-84 US	MBO	30 days	28	56.0%
Lehn and Poulsen (1989)	1980-87 US	ALL	20 days	257	36.1%
Amihud (1989)	1983-86 US	MBO	20 days	15	42.9%
Kaplan (1989a, 1989b)	1980-85 US	MBO	2 months	76	42.3%
Asquith and Wizman (1990)	1980-88 US	ALL	1 day	47	37.9%
Harlow and Howe (1993)	1980-89 US	ALL	20 days	121	44.9%
Travlos and Cornett (1993)	1975-83 US	ALL	1 month	56	41.9%
Easterwood, Singer, Seth and Lang (1994)	1978-88 US	MBO	20 days	184	32.9%
Weir, Laing and Wright (2005a)	1998-2000 UK	ALL	1 month	95	44.9%
Renneboog, Simons and Wright (2007)	1997-2003 UK	ALL	20 days	177	41.00%
Guo, Hotchkiss and Song (2011)	1990-2006 US	ALL	1 month	192	29.2%
Officer, Ozbas, and Sensoy (2010)	1984-2007 US	ALL (club) ALL (sole)	250 days	70 128	24.04% 36.11%
Fidrmuc, Palandri, Roosenboom, and van Dijk (2013)	1997-2003 UK	Pure MBO PE MBO	2 months	33 37	38.68% 39.10%

**Table 7: Summary of the second strand of the literature: Impact**

This table shows the most important papers that deal with strand 2 of public-to-private research. Yes = supportive, No = unsupportive, Inconcl. = inconclusive. All estimated shareholder wealth effects from Table 3 and 4 are reproduced here. \*\*\*, \*\*, \* stand for statistically significant at the 1, 5 and 10% level, respectively.

ALL = all going private deals, MBO = MBO deals only, FCF = Free Cash Flow hypothesis, Bidder Comp. = Bidder competition.

Study	Sample period/ country	Obs.	Type of deal	Event window	CAR	Anticipation Window	Premium	Tax	Incentive Realignm.	Control	FCF	Wealth Transfer	Trans. Cost	Defensive	Under-Val.	Bidder Comp.
DeAngelo, DeAngelo and Rice (1984)	1973-80 US	72	ALL	-1,0 days -10,10 days	22.27%*** 28.05%***	40 days	56.3%	-	Inconcl.	Inconcl.	-	-	-	-	-	-
Lowenstein (1985)	1979-84	28	MBO	-	-	30 days	56.0%	-	-	-	-	-	-	-	-	Yes
Torabzadeh and Bertin (1987)	1982-85 US	48	ALL	-1,0 months -1,1 months	18.64%*** 20.57%***	-	-	-	-	-	-	-	-	-	-	-
Lehn and Poulsen (1989)	1980-87 US	244	ALL	-1,1 days -10,10 days	16.30%*** 19.90%***	20 days	36.1%	No	-	-	Yes	-	-	-	-	-
Amihud (1989)	1983-86 US	15	MBO	-20,0 days	19.60%***	20 days	42.9%	-	-	-	-	-	-	-	-	Yes
Kaplan (1989a , 1989b)	1980-85 US	76	MBO	-40,60 days	26.00%***	40 days	42.3%	Yes	-	-	-	-	-	-	-	-
Marais, Schipper and Smith (1989)	1974-85 US	80	ALL	0,1 days -69,1 days	13.00%*** 22.00%***	-	-	-	-	-	-	No	-	-	-	-
Asquith and Wizman (1990)	1980-88 US	47	ALL	-	-	1 day	37.9%	-	-	-	-	No	-	-	-	-
Lee (1992)	1973-89 US	114	MBO	-1,0 days -69, 0 days	14.90%*** 22.40%***	-	-	-	-	-	-	-	-	-	No	-
Lee, Rosenstein, Rangan and Davidson (1992)	1983-89 US	50	MBO	-1,0 days -5,0 days	17.84%*** 20.96%***	-	-	-	-	-	-	-	-	-	-	Yes
Frankfurter and Gunay (1992)	1979-84 US	110	MBO	-50,50 days -1,0 days	27.32%*** 17.24%***	-	-	Yes	No	-	Yes	-	-	-	-	-

Table 7 continued

Study	Sample period/ country	Obs.	Type of deal	Event window	CAR	Anticipation Window	Premium	Tax	Incentive Realignm.	Control	FCF	Wealth Transfer	Trans. Cost	Defensive	Under-Val.	Bidder Comp.
Travlos and Cornett (1993)	1975-83 US	56	ALL	-1,0 days -10,10 days	16.20%*** 19.24%***	1 month	41.9%	Inconcl.	Inconcl.	Inconcl.	Inconcl.	No	No	-	Yes	-
Harlow and Howe (1993)	1980-89 US	121	ALL	-	-	20 days	44.9%	-	-	-	-	-	-	-	Yes	-
Easterwood, Singer, Seth and Lang (1994)	1978-88 US	184	MBO	-	-	20 days	32.9%	-	-	-	-	-	-	-	-	Yes
Halpern, Kieschnick and Rotenberg (1999)	1981-85 US	126	ALL	-	-	-	Not mentioned	No	No	-	No	-	-	-	-	Yes
Goh, Gombola, Liu and Chou (2002)	1980-96 US	323	ALL	-20,1 days 0,1 days	21.31%*** 12.68%***	-	-	-	-	-	-	-	-	-	Yes	-
Andres, Betzer, and Hoffmann (2003)	1996-02 EU	99	ALL	-1,1 days -15,15 days	15.78%*** 21.89%***	-	-	No	No	Yes	No	No	-	-	Yes	-
Renneboog, Simons and Wright (2007)	1997-03 UK	177	ALL	-1,0 days -5,5 days -40,40 days	22.68%*** 25.53%*** 29.28%***	20 days	41.0%	No	Yes	Yes	No	-	Yes	No	Yes	Yes
Andres, Betzer and Weir (2007)	1997-05 EU	115	ALL	-30, 30 days	24.20%***	250 days	-	-	No	Yes	No	-	-	-	Yes	-
Oxman and Yildirim (2007)	1986-05 US	164	ALL	-	-	-	29.2% (small) 33.8% (big)	No	-	-	Yes	-	-	-	Yes	-
Officer, Ozbas, and Sensoy (2010)	1984-07 US	198	ALL	-1,1 days	-	250 days	-	-	-	Yes	-	-	-	-	Yes	Yes

**Table 8: Post-Buyout Employment Effects**

This table shows all papers that consider the effects of going private on the target firms' employees, in terms of wages and lay-offs. LBO = all leveraged buy-out deals. MBO = management buy-out deals only. MBI = management buy-in deals only. IBO = institutional buy-out deals only.

Study	Sample period/ Country	Type of deal	Obs.	Operating Performance	Change in Employee Base	Wages
Kaplan (1989a)	1980-1986, US	MBO	76	Incr.	Incr. (0.9%)	-
Muscarella and Vetsuypens (1990)	1976-1987, US	LBO	26	Incr.	Decr. (-0.6%)	-
Smith (1990)	1977-1986, US	MBO	58	Incr.	Incr. (+2.0%)	-
Lichtenberg and Siegel (1990)	1983-1986, US	LBO	1,108	Incr.	-	Incr. (+3.6%) if prod. worker Decr. (-5.2%) if nonprod. worker
Amess and Wright (2007)	1999-2004, UK	MBO	1,014	Insign.	Incr. (+0.51%)	Decr (-0.31%)
		MBI	336	Incr.	Decr. (-0.81%)	Decr (-0.97%)
Amess and Wright (2012)	1993-2004, UK	LBO	533	-	Insign.	-
Davis et al. (2014)	1980-2005, US (incl.private-to-private)	LBO	150,000	Incr.	Decr. (-6.0%)	Decr. (-2.4%)
Goergen, O'Sullivan, and Wood (2014)	1997-2006, UK	IBO	106	Insign.	Decr.(-2.6%)	Decr.
Agrawal and Tambe (2016)	1995-2010, US	LBO	4,193	-	Incr..	Incr. (+8.9%)

**Table 9: Summary of the third strand of literature: Process**

This table shows the most important papers that deal with strand 3 of the public-to-private research. Yes = supportive, No = unsupportive, Inconcl. = inconclusive. Type of deal ALL refers to all going private transactions, MBO and MBI stands for management buyout and management buyin transactions, respectively.

Study	Sample period/ country	N	Transaction type	Tax	Incentive realignment	Control	Free cash flow	Wealth transfer	Transaction costs	Takeover defence	Under- valuation
Kaplan (1989a)	1980-85US	76	MBO	-	Yes	-	-	No	-	-	No
Baker and Wruck (1989)	1986 US	1 case	MBO	-	Yes	Yes	Yes	No	-	-	No
Smith (1990)	1977-86 US	58	MBO	-	Yes	-	-	No	-	-	No
Muscarella and Vetsuypens (1990)	1973-85 US	151	MBO	-	Yes	Yes	-	No	-	-	Yes
Lichtenberg and Siegel (1990)	1981-86 US	244	ALL	-	-	Yes	-	No	-	-	-
Jones (1992)	1984-85 US	17	MBO	-	Yes	-	-	-	-	-	-
Opler (1992)	1985-89 US	45	ALL	Yes	Yes	-	-	-	-	-	Inconcl.
Liebeskind, Wiersema and Hansen (1992)	1980-84 US	33	ALL	-	Yes	-	-	-	-	-	-
Green (1992)	1980-84 UK	8 cases	MBO	-	No	-	-	-	-	-	-

Table 9 continued

Study	Sample period/ Country	N	Transaction type	Tax	Incentive realignment	Control	Free cash flow	Wealth transfer	Transaction costs	Takeover defence	Under- valuation
Long and Ravenscraft (1993)	1978-89 US	48	ALL	Yes	-	-	Yes	-	-	-	-
Denis (1994)	1986 US	2 cases	LBO	-	Yes	Yes	Yes	-	-	-	No
Zahra (1995)	1992 US	47	ALL	-	Inconcl.	Inconcl.	Inconcl.	-	-	-	-
Robbie and Wright (1995)	1987-89 UK	5 cases	MBI	-	Yes	Yes	-	-	-	-	Yes
Holthausen and Larcker (1996)	1983-88 US	90	ALL	-	Yes	-	No	-	-	-	-
Bruton, Keels and Scifres (2002)	1980-88 US	39	ALL	-	Yes	-	-	-	-	-	-
Harris, Siegel and Wright (2005)	1994-1998 UK	35752 (establishm ents)	MBO	-	Yes	-	-	-	-	-	-
Guo, Hotchkiss, and Song (2011)	1900-2006 US	192	ALL	Yes	Yes	Yes	Yes	-	-	-	No
Gohn, Mills, and Towery (2014)	1995-2007 US	317	ALL	Yes	-	-	-	-	-	-	Yes

**Table 10: Summary of previous empirical results for the fourth strand of literature: Duration**

This table shows the most important papers that deal with strand 4 of public-to-private research. ALL stands for all going private transactions (LBOs, MBOs, MBIs, IBOs).

<b>Study</b>	<b>Sample period/ country</b>	<b>Type of deal</b>	<b>Obs.</b>	<b>Main result of the study</b>
Kaplan (1991)	1979-86 US	ALL	183	After year 5, the conditional probability of returning to public ownership decreases.
Van de Gucht and Moore (1998)	1980-92 US	ALL	343	Until year 7, the conditional probability of returning to public markets increases, while after seven years, it decreases. The timing of reversion is influenced by the financial markets' climate.
Wright, Robbie, Thompson and Starkey (1994)	1981-92 UK	ALL	2,023	Ownership, financial, and market-related factors determine the duration of the private status.
Wright, Thompson, Robbie and Wong (1995)	1983-86 UK	ALL	140	The conditional probability of reversion increases strongly between year 3 and year 6, and subsequently decreases.
Halpern, Kieschnick and Rotenberg (1999)	1981-85 US	ALL	126	Longevity of the private status is increasing in managerial equity stake.
Stromberg (2007)	1970-2007 Global (includes also private-to-private deals)	ALL	Over 21,000	Longevity of the private status increases over time. Privately held pre-LBO firms are more likely to go public than firms in public-to-private LBO deals. Private equity backed LBOs are more likely to exit early than MBOs.
Cao and Lerner (2009)	1981-2003 US	ALL	526	Average duration of 3.5 years. Returns decrease for longer holding periods, but quick flips perform even more poorly.