

Private Equity Portfolio Company Fees

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Abstract

In private equity, General Partners (GPs) receive fee payments from companies whose board they control. Fees sum up to \$20 billion evenly distributed over time, representing over 6% of the equity invested by GPs on behalf of their investors; they do not vary with business cycles, company characteristics, or GP performance. Fees vary significantly across GPs and are persistent within GPs. GPs charging the *least* raised *more* capital post financial crisis and are backed by more skilled LPs. GPs that went public increased fees prior to that event. We discuss how these results could be explained by optimal contracting and tax arbitrage.

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Abstract

In private equity, General Partners (GPs) receive fee payments from companies whose board they control. Fees sum up to \$20 billion evenly distributed over time, representing over 6% of the equity invested by GPs on behalf of their investors; they do not vary with business cycles, company characteristics, or GP performance. Fees vary significantly across GPs and are persistent within GPs. GPs charging the *least* raised *more* capital post financial crisis and are backed by more skilled LPs. GPs that went public increased fees prior to that event. We discuss how these results could be explained by optimal contracting and tax arbitrage.

Since the 2008 financial crisis, Private Equity (PE) firms have gone from managing \$1 trillion to managing \$4.3 trillion (Preqin). From public filings we know that over that time period, the private equity divisions of Carlyle, KKR, Blackstone and Apollo earned collectively i) \$20 billion of carried interest, which is paid if the return exceeds a threshold level, ii) \$13 billion of management fees, which is a fixed fee, and iii) \$3 billion of ‘net monitoring and transaction fees’ (Appendix Table 1).¹ While the former two sources of fees have been extensively studied (e.g. Gompers and Lerner (1999), Metrick and Yasuda (2010), and Robinson and Sensoy (2013)), we know little about monitoring and transaction fees besides summary statistics reported in practitioner memos and informal surveys. Moreover, these fees are puzzling because it is not clear for which services they are being earned, and they are being paid by companies whose board members are also representatives of the PE firm receiving these fees. In fact, these fees recently became a public policy focus with the SEC fining several PE fund managers and state treasurers demanding full disclosure.²

Using a comprehensive hand-collected dataset, this paper describes the contracts underlying transaction and monitoring fees, quantifies those fees, and studies their variation across fund managers, business cycles, and company type. In addition, we attempt to reconcile these fee arrangements with relevant optimal contracting theories.

Most private equity funds are organized as limited partnerships, with private equity firms (e.g. Blackstone) serving as General Partners (GPs) of the funds, and institutional investors providing most of the capital as Limited Partners (LPs). Limited Partnership Agreements (LPAs) are signed at the funds’ inception and define the expected payments by LPs to GPs: the management fee and carried interest. The amount of fees charged to portfolio companies (such as transaction and monitoring fees) is not specified in the LPA: they are contracted upon in Management Services Agreements (MSAs), which are signed by GPs and representatives of the company at the time of the transaction, hence ex-post LPA. The LPA, however, states the fraction of each type of portfolio company fee that is rebated against the management fee due by LPs.

As limited partnerships last for over 10 years, LPAs are necessarily incomplete contracts. It is difficult to write and foresee the numerous contingencies that can arise over such a long period of time. The earliest foundations of transaction cost economics (Williamson (1971)) argues that incomplete contracts imply the need for ex-post adaptation. The procurement literature, for example, highlights the importance of allowing agents to charge ex-post adaptation costs (e.g. Crocker and Reynolds (1993), Bajari and Tadelis (2001), Bajari, Houghton, and Tadelis (2014)). We may need a

¹ The amount charged to companies is higher than \$3 billion because the reported amount is net of what has been refunded to fund investors (the limited partners).

² On July 21st 2015, thirteen state and city treasurers wrote to the SEC to ask for private equity firms to reveal the monitoring and transaction fees they charge investors. In August 2015, one of the largest private equity investors said that it will no longer invest in funds that do not disclose all of their fees. The SEC announced on October 7th 2015, that it “will continue taking action against advisers that do not adequately disclose their fees and expenses” following a settlement by Blackstone for \$39 million over so-called accelerated monitoring fees.

combination of an ex-ante contract such as the LPA, which is standard and similar across GPs, followed by an ex-post adjustment contract such as the MSA.³ This would imply that portfolio company fees should be predominantly *company- and time-specific*, not GP-specific. Companies that are riskier or more difficult to monitor should command higher fees, and fees should increase for all companies when LBOs are more costly to execute: times of higher credit spreads, lower risk premium, or lower credit supply (Axelson et al. (2013), Haddad, Loualiche and Plosser (2016)).

There are several other theoretical arguments to support the view that MSAs are part of an optimal contracting device. We mention four such arguments here. First, as LPs need to learn about GP's talent and pay GPs accordingly, it may be optimal to start with a standard and low compensation, and to let GPs adjust it upward if they are successful (see Berk and Green (2004), Robinson and Sensoy (2013)). Second, GPs have less financial incentives when their carried interest is 'out-of-the-money', and MSAs can be used to reset their incentives. Similarly, when a company is in financial distress, equity holders have less incentive to perform since some of the benefits accrue to debtholders (Myers (1977)). Discretionary adaptation fees could solve this old problem. Third, as fees are subordinated to debt, they can be a commitment device by GPs to repay debt in order to earn the fees (Malenko and Malenko (2015)). Fourth, MSAs can counteract a GP's incentive to invest in bad projects when they are getting close to their investment period deadline (Axelson, Strömberg, and Weisbach (2009)). These arguments imply that *GP characteristics* relate to fee levels: the GPs' past and current performance, the portfolio company's degree of financial distress, the GP's reputation with creditors, fund age at the time of LBO inception.

Alternatively, these fees may be camouflaged dividends. The idea, building on Polsky (2014), is that GPs transfer cash out of the company and call it a fee rather than a dividend because fees, unlike dividends, are deductible from corporate taxes. GPs then share the tax savings with LPs via a reduction in management fees. Under this tax view, we expect GPs to charge more at times where more taxes are being paid (i.e. in good times), and to companies with larger tax bills. GPs should rebate at least 60% of the portfolio company fees to LPs because the maximum marginal corporate tax rate is 40%. We may also expect LPs to reward GPs who generate larger tax savings.⁴

We hand collect comprehensive information about portfolio company fees: we examine 25,000 pages of relevant SEC filings covering 1,044 GP investments in 592 Leverage Buy-Out (LBOs) transactions, whose total enterprise value (TEVs), including add-on acquisitions, add up to

³ Gompers and Lerner (1999) and Metrick and Yasuda (2010) show that these two 'headline' fees are overall similar across GPs and over time. Robinson and Sensoy (2013) point out that there is substantial ex-post variation in the present value of funds' management fees.

⁴ There is a wealth of non-mutually exclusive explanations, whose evaluations are beyond the scope of this paper. We discuss some of these in the conclusion. This paper is the first to document these fees and the underlying contracts; it only offers a first and partial evaluation of the underlying rationale, focusing on optimal contracting theories and tax arbitrage. Hopefully, our results show that this corporate governance issue is relevant and open routes for follow up research.

\$1.1 trillion. SEC filers need to disclose i) ‘material definitive agreement’ such as credit agreements and MSAs; ii) previous fiscal year or currently contemplated ‘related party transaction’ worth more than \$120,000; and iii) financial information for the preceding three years. As a result, SEC filings provide annual information on portfolio company fees. LBOs with SEC filings are essentially those that ended their PE sponsorship via an Initial Public Offering, and LBOs with publicly traded debt.

We retrieve the underlying contracts (MSAs) and record the time-series of the two main portfolio company fees. A transaction fee is charged at the time of LBO inception and when ‘add-on’ acquisitions are made. The sum of the transaction fees in our sample is \$10 billion. Monitoring fees are charged quarterly during the life of the investment; they add up to a similar amount. These two fees thus reach near to \$20 billion, or 6% of the equity invested by GPs on behalf of their investors, and are basically equally distributed over time. Importantly, MSAs indicate that transaction fees are paid on top of what it costs to acquire the company and monitoring fees do not require actual work to be performed to trigger their payment.

To evaluate optimal contracting theories we first study how the fees relate to LBO characteristics (industry, earnings volatility, leverage, and GP ownership) and to business and LBO-industry cycles. However, we find no statistically significant relations. Notably, fees are not higher at times when it is more difficult to execute and monitor LBO investments, or at times of lower corporate profits. Adding time fixed effects only marginally increases R-squared values. This evidence is not consistent with the hypothesis derived from the procurement literature or with the ‘tax view’. Moreover, contrary to the predictions of the tax view, only half of the companies have positive earnings before tax and these companies do not pay more fees.

Some optimal contracting theories predict that fees should vary at the GP level, and we do find evidence of fee persistence. When we control for GP past fee policy, the R-squared value doubles. However, fees are not related to any of the GP characteristics suggested by the theories we reviewed (e.g. GP past performance).

We then study the sensitivity of capital-flows to fees. It is arguably not until the aftermath of the financial crisis that the existence of portfolio company fees became public information. How did LPs react when information about these fees started piling up? We find that the amount of capital raised post-crisis (2009 to 2015) is strongly related to the amount of portfolio company fees charged by GPs pre-crisis. This result also holds after we control for the amount of capital raised pre-crisis and for past performance (both are positively related to the amount of capital raised post-crisis). This indicates that high-fee GPs were ‘penalized’ both for lower performance (fees mechanically reduced performance) and for these fees per se.

If we simply rank GPs by the amount of fees they charge, of those charging the most, half have not raised a new fund since the crisis (and the other half raised much smaller funds). In contrast, the GPs that charge the least have all raised a new fund, in a relatively short time, and raised more

money post-crisis than pre-crisis. This evidence of LPs rewarding low-fee GPs contradicts both the optimal contracting view and the tax view.⁵

In addition, following Cavagnaro et al. (2015) we proxy LP ‘skill’ by the average performance of the private equity funds in which an LP invested. For each GP we then compute the average ‘skill’ across its LPs. We find that most skilled LPs invest less in high-fee GPs.⁶

Finally, albeit perhaps anecdotal and subject to the usual endogeneity caveats, we look at the decision by GPs to sell part of their company. In 2006-2008, three GPs decided to deviate from the traditional partner ownership model and their partners sold part of their stakes. The IPO literature shows that the cash flow of firms going public tends to increase around the time of their IPO, presumably because IPO firms pump up their performance in order to fetch higher valuations at the offering (DeGeorge and Zeckhauser (1993)). In addition, the two types of portfolio company fees should affect GP valuation differently: on-going ten-year fixed monitoring fee contracts have a larger impact on valuations than (one-time non-recurring) transaction fees. This is what we observe: the three selling GPs doubled their monitoring fees while the other three comparable GPs decreased these fees by 38% (the rest of the GPs increased them by 22%). However, subsequent returns are similar for the selling and non-selling GPs indicating that there was no obvious improvement in monitoring.

This is the first study to quantify the fees that companies have paid over a twenty-year period to GPs. In addition, we assemble a comprehensive body of empirical evidence and find it difficult to reconcile these fee arrangements with our two main hypotheses. We find indicative evidence that less skilled LPs are those that backed high-company-fee chargers and once the news about these fees became widespread, LPs overall strongly reduced their capital allocations to high-company-fee GPs.⁷

Overall, it seems that market forces are at work similar to what Brown, Gredil, and Kaplan (2015) argue about potential accounting manipulations by GPs. GPs that charge the highest company-fees tend to be outliers, backed by less skilled LPs, and raise significantly less capital going forward. A caveat is that it took two decades for some market forces to manifest themselves. Perhaps increased regulatory intervention has been decisive in helping investors to coordinate, especially among the ‘less skilled’ investors. We note that SEC fines have been small compared to the amount of fees we document. In addition, in October 2015 the SEC fined one prominent GP for insufficient disclosure of accelerated monitoring fees. We find that such fees are not ubiquitous across GPs but are nonetheless charged by many GPs, not just one. It is however a difficult situation for the regulator. For instance,

⁵ Unless we would add a behavioral layer. For example, LPs or their supervisors overreact to information about these fees; they do not realize that these fees are optimal and in their best interests.

⁶ Anecdotally, David Swensen, who is often presented as one of the most skilled LPs is not invested with any of the high-fee chargers in our sample and is backing up several low-fee chargers in our sample.

⁷ To fully understand the LP’s situation and reaction, however, we would need to have both the MSAs and LPAs for each deal. This significant undertaking presents an opportunity for valuable future research. We do have access to a number of non-anonymous LPAs, the sub-sample of companies for which we have both the MSA and the LPA of the GP is small however. In addition, we note that even when we have access to LPAs there are pages of exceptions that make it difficult to simulate what LPs end up paying.

we show that transaction fees do not cover transaction costs but ‘financial advice’ provided by GPs for the purchase of a company by a third party. This may fall under the definition of a ‘broker.’ GPs did not register as such and the law would require a refund of \$10 billion (in our sample alone). But as we find that these fees are present as far back as we can go, it would be difficult for the SEC to now implement the ‘broker dealer’ rule.

The paper continues as follows: Section 1 describes the content of MSAs and presents the related literature. Section 2 discusses the data and key descriptive statistics. Section 3 is dedicated to the cross-section of fees charged in different LBOs. Section 4 studies the cross-section of fees charged by GPs. Section 5 concludes by discussing possible future research, policy implications, and whether portfolio company fees are a question of the past, or not.

1. Management Services Agreements: Content and related literature

We begin with some institutional details about the working of private equity funds. Next, we describe the content of Management Service Agreements (MSAs). Finally, we review the literature, formulate hypotheses about the motivation behind MSAs, and list empirical implications.

1.1. Institutional details

Private equity comprises various types of investments: venture capital, real estate etc. The largest category of private equity investments is Leveraged Buy-Out (LBO) whereby a fund takes control of a company using a significant amount of debt. From the start of the global financial crisis to the end of 2014, LBO firms have raised more than \$1 trillion of capital. Carlyle, KKR, Blackstone and Apollo – the four largest LBO firms – alone have raised \$100 billion dollars.⁸

An LBO fund is a private partnership between i) a group of asset owners (e.g. pension funds, sovereign wealth funds) called Limited Partners (LPs) and ii) an LBO firm called General Partner (GP). A contract is signed at the time of fund inception between a GP and its LPs: i.e., the Limited Partnership Agreement (LPA). LPAs govern the LP-GP relationship for the life of the fund which is at least ten years; they are described in detail in studies by Gompers and Lerner (1999) and Metrick and Yasuda (2010).

LPs commit capital to GPs and the latter are given five years to find suitable investments to spend that committed capital. When GPs find a suitable investment, they call the necessary amount of capital from the LPs, arrange the acquisition, and usually take control of the board of directors, i.e. assign the majority of the seats to their representatives.⁹ In turn, the board of directors appoints the

⁸ Amounts raised by largest 300 funds that ‘closed’ between 2009 and 2013 according to Private Equity International.

⁹ Cronqvist and Fahlenbrach (2013) show a reduction in board size post-LBO by 1.3 directors to 8.3, 5.5 of which are private equity sponsor representatives. Cornelli and Oguzhan (2015) show that 33% of the seats on the board are taken by LBO sponsors after the LBO.

executive team. A Management Services Agreement (MSA) is then signed between GPs and the executive team.

LPAs specify a management fee LPs need to pay GPs every quarter (about 0.5% of capital committed per quarter), and a carried interest (20% of profits is paid to GPs if an internal rate of return of at least 8% per annum net of all fees is reached). In addition, LPAs mention that portfolio company fees may be charged and they specify what fraction of each type of portfolio company fee will be refunded. The refund, also called rebate or offset, reduces the management fee due in a given quarter. If there is more money to be refunded than management fees due, then the excess may be rolled over to the next quarter (the roll-over rules, the list of exceptions, the methodology etc. are specified in the LPA).

Notice that LPs do not negotiate on the content of MSAs and therefore do not negotiate the level of the fees charged. MSAs are ex-post contracts for LPs and in practice, LPs are not shown past MSAs. LPs negotiate only on management fees, carried interest, and the fraction of portfolio company fees that is rebated against the management fees due. In other words, the possibility that MSAs will be in place is mentioned in the LPA but the content of MSAs is not described in LPAs.

Figure 1 provides a detailed illustration of the situation at the time of the investment. LPs provide the equity to a shell company, usually sitting in the Cayman Islands. This transaction is organized, a.k.a. 'sponsored', by GPs. GPs control the board of the shell company and thus appoint the senior executive team. The shell company then takes over the assets of a company incorporated in the US, thereby buying-out its equity and debt holders. The shell company now has the assets of the targeted company, and it becomes the portfolio company. It is controlled by the GP and has the capital structure of the shell company. The executive team signs a Lending Agreement (LA) with the lenders and a Management Services Agreement (MSA) with the GPs.

The situation of the executive team in an LBO setting is particularly interesting. On the one hand executives are appointed by GPs, making them de facto their employees. It is difficult for them to reject an MSA. In fact, GPs sometimes sign the MSA on behalf of the executive team. On the other hand, executives have a significant equity ownership – typically 10 to 20 percent of the most junior equity tranche. Fees represent an ex-post dilution of the executives' equity ownership in the company. Executives are thus expected to negotiate the MSA as part of their overall compensation package.¹⁰

Lenders also have a say. As ex-post cash transfers out of the company are detrimental to debtholders, lenders request MSAs and usually obtain clauses such as subordination of payments to the sponsors to payment to the lenders. Lenders may also raise the cost of financing for GPs that

¹⁰ Anecdotally, a serial PE executive told us that he does not accept appointments by certain GPs because their MSAs are 'excessive.' Another executive told us that he refused to pay GP expenses and could do this because he was doing well.

charge higher fees. This situation is reminiscent of the LBO model presented in Axelson, Strömberg, and Weisbach (2009), where lenders act as ex-post gatekeepers.

Importantly, GPs need to raise a new fund every two to four years in order to have sufficient capital to seize investment opportunities at any point in time. In other words, GPs need to go back to LPs regularly to obtain new capital commitments: the LP-GP interaction is a ‘repeated game.’ Deceived LPs commit less, if at all, to GPs’ next fund, which discipline the GP as long as the GP has a positive probability to raise a follow-on fund.

1.2 Description of Management Services Agreements

In the Appendix we show the Management Services Agreement of the largest LBO to date: *Energy Futures Holding (EFH)*. This agreement was entered on October 10, 2007. The Total Enterprise Value (TEV) is \$45 billion. The MSA starts by mentioning that EFH ‘retains’ the three GPs (KKR, TPG and Goldman Sachs) to provide services to the company. The 14-people board of EFH counts three representatives for each of the three GPs; hence the GPs control the board of EFH.

Section 1 specifies a \$35 million annual ‘advisory fee’, a.k.a. ‘monitoring fee.’ This fee increases by 2% per year. Corresponding services are broadly defined as ‘certain management, consulting and financial services.’ Interestingly, the MSA states that these services are of ‘the type customarily performed by such Managers.’ All fees mentioned in the MSA are split according to the respective ownership of equity by the three GPs, which may or may not coincide with how the workload is shared.

Section 2 states that *if* the company is prohibited from paying the fees due (e.g. because of a lending agreement) fees will be paid when it is no longer prohibited to pay them. Fees are then usually carried forward with a compounded interest rate of 10-15% per annum.

Section 3 contains the transaction fee: \$300 million is charged for ‘financial advisory services and capital structure review.’ Lehman Brothers worked in connection with the acquisition and receives \$6 million of the \$300 million; this is not recorded in our dataset because Lehman Brothers is not a GP in this transaction.

Section 4 covers post-acquisition fees: each *proposed* acquisition, merger, recapitalization, structural reorganization, dispositions of assets etc. generates a fee for the GPs that is equal to 1% of the transaction value, subject to the consent of the board of directors, which is controlled by the GPs.

Section 5 authorizes GPs to invoice the company for ‘reasonable’ expenses in connection with their task. Traditionally, management fees paid by LPs are seen as covering the cost of acquiring, monitoring and disposing of businesses for GPs (e.g. GPs need to hire lawyers, visit companies). MSAs shift some of these expenses to the company and LPs do not get any rebate of these expenses.

Importantly, this section implies that the \$300 million transaction fee does *not* cover external costs of acquiring a company.

Section 12 states that the agreement is in place until 2019, i.e. for twelve years. Termination can be triggered by mutual consent, or by a change of control or IPO, but this is up to the company, hence the board of directors, hence the GPs. In this event, GPs receive a ‘termination fee’ equal to the present value of the advisory fees up to 2019 (discount rate is the risk-free rate of a maturity-matching US T-Bill). By definition the termination fee is not related to actual work since the termination can be decided at any time and (de facto) unilaterally. The work related to a change of control (e.g. IPO) is covered in section 4: a 1% fee can be charged for it.

Sections 15 to 17 are partly waiving fiduciary duties: for example, section 15 states that the GPs cannot be held liable in case they have not performed any services or if the services were not satisfactory. Note that individuals signing on behalf of the company are working for TPG and KKR: Jeffrey Liaw was Vice President at TPG since 2005 and Jonathan Smith was at KKR since 2000.

In the internet appendix (not included here to save space) we show other MSA summaries. We selected the first, third and fifth largest LBO to date, and three mid-market LBOs (*Energy Futures Holding*, *Hospital Corporation of America*, *Harrah’s Entertainment*, *West Corporation*, *Simmons 1998 and Simmons 2003*; respectively). Two of the mid-market MSAs are for Simmons, a company that was held by two different GPs successively. These MSAs are similar overall, but we discuss here some of the interesting differences.

A particularity of *Hospital Corporation of America* is that the founding family receives \$29 million of transaction fees while it is unclear how the founding family can contribute to the legal, accounting or advisory work it is said to cover. The monitoring fee increases each year by the growth in adjusted EBITDA and is therefore performance dependent. The list of refundable expenses includes the use of privately owned airplanes, a.k.a. private jets, “as determined by the party seeking reimbursement.” In *Harrah’s Entertainment* MSA the rate charged for ‘subsequent fees’ is not specified and kept flexible: it is what ‘internationally-recognized investment banks’ would charge. The termination fee calculation is subjective as it requires an estimate of fees that would have been received absent termination.¹¹ Sections relating to fiduciary duties list potential conflicts of interest and bind the company (and related parties) not to hold GPs liable for any of their other activities (except ‘wilful misconduct’).

¹¹ “...a lump-sum amount equal to the net present value of the remaining Transaction Fee, the Monitoring Fee, the Subsequent Fee (...) using an annual discount rate equal to the then-current rate of interest on the Company’s revolving credit facility, and assuming that EBITDA would have grown at a rate equal to the greater of (x) 6%, compounded annually and (y) the compounded annual EBITDA growth rate for the last two completed fiscal years.” It seems difficult at the time of contract termination to know how many and how much post acquisition fees would have been charged going forward for example. Similarly, it is difficult to reliably forecast future EBITDAs.

The MSA of the *West Corporation* LBO by TH Lee mentions first-class airfare or charter (i.e. private jets) as eligible expenses, it lists expenses that can be claimed by the GPs and all the expenses related to the transaction (i.e. payments to advisors, accountants, lawyers etc). One distinguishing element is that the termination fee is the present value of monitoring fees for seven years irrespective of when the contract comes to an end. Hence the MSA could stop after nine years and there would be seven years' worth of fees still to be paid. An IPO for that company actually occurred in March 2013, seven years after acquisition, meaning that the private equity firms received 14 years of monitoring fees on that investment. When we look at the two MSAs from *Simmons* (1998 one by Fenway partners and the 2003 one by TH Lee) we observe that the 2003 MSA is very different to the 1998 MSA, but the 2003 MSA of TH Lee is similar to that of *West Corporation* although the two companies have little in common a priori. This is a first indication that MSAs seem more related to GPs than to company characteristics.

Drawing from the entire sample, we find that half of the MSAs last for ten years. Termination fees, if present, are usually equal to the present value of fees until contract expiration. It is common for executives to agree not to sue GPs in case of conflicting interests or unsatisfactory provision of services. Executives/companies refund transaction costs and business expenses that GPs deem reasonable. MSAs state that several GP initiatives trigger an additional fee payment ('post acquisition fees'); it is left to the discretion of GPs.¹² Note also the potential for indirect fees such as GPs hiring a law firm for the company at a premium price and receiving a kick-back from the law firm.¹³

In a nutshell, transaction and monitoring fees appear to be ex-post discretionary compensation items; a fraction of these fees are refunded to LPs, but the amount is discretionary.

1.3. Related literature and hypotheses

Using a survey, Metrick and Yasuda (2010) are the first to provide magnitudes for transaction fees and monitoring fees. They do not express a particular judgement regarding these fees, stating that these are: '...just another way for BO funds to earn a revenue stream. While it may seem odd that funds are effectively paying themselves a fee to run companies that they own, the sharing rules with LPs can make this an indirect way for the LPs to pay the GPs for their services. From the perspective of the LPs, it should not matter whether these payments come directly through management fees or indirectly through monitoring fees, as long as the GP can create sufficient value to justify them.' In this section, we draw from the literature in Finance, Law and Industrial Organization to derive a set of hypotheses.

¹² These additional payments may or may not trigger a rebate to LPs. E.g. in an SEC filing a GP called Riverside states that partners have invoiced portfolio companies for a range of services they have performed and these payments do not qualify for the rebate on portfolio company fees described in their LPA.

¹³ <http://www.nytimes.com/2015/06/14/business/retirement/when-private-equity-firms-give-retirees-the-short-end.html? r=2>.

MSAs as a solution to an optimal dynamic incomplete contracting problem

As pointed out by Adams, Hermalin, and Weisbach (2010), corporations are complex: to have any traction, a model must abstract away from many features of real-life corporations. This makes it difficult to understand the complex and multifaceted solutions of the principals' problem. There may be a contracting model that can perfectly rationalize all the aspects of the MSAs. Here we mention a number of possible 'optimal contracting' explanations that we attempt to bring to the data but we would not claim to be comprehensive.

We begin with mechanisms studied in the Industrial Organization literature. The buyout industry seems to partly fit both the theories of three-tier hierarchies and the dynamic incomplete contract theories used in procurement contract design.

Three-tier hierarchy models feature a principal, a supervisor and an agent; in our context, the three tiers would be: LPs, GPs and executives respectively. Tirole (1986) points out that the analysis of hierarchical structures does not boil down to the compounding of basic agency costs, due to the possibility of collusion via implicit or explicit side contracting between the agent and the supervisor, which he then introduces in a three-tier hierarchy model. The ensuing literature studies the conditions under which such collusion may be beneficial and, when it is not, how to minimize the negative effects. MSAs fit well the definition of side-contracts in that literature but the models studied do not allow for a repeated game setup. In addition, the literature focuses on asymmetric information and information manipulation by the supervisor and the agent in order to 'fool' the principal. As a result, most mechanism designs that have been developed so far may not apply to our context.

An exception is the intuition developed by Itoh (1993) and Holstrom and Milgrom (1990) that side contracting may result in an efficient risk allocation between the supervisor and the principal, allowing principals to save on risk compensation. It seems plausible that LPs allow GPs to enter MSAs in order to reduce the volatility of GP profits, hence reduce GP income risk, and that in turn allows LPs to pay GPs less on average.

The procurement literature in Industrial Organization may be more directly related to the problem at hand despite its featuring only two layers: a principal and an agent. This literature deals with incomplete contracting in a (long-term) dynamic setting and the central question is how to implement state contingent effort. The solution in this literature is often to have an initial minimal and standard contract (like the LPA) and then allowing for adaption costs to be paid to the agent. MSAs could be viewed as such adaptation tools. If it becomes more costly to execute and monitor LBOs because of tighter credit conditions, for example, then GPs can still perform optimally their task because the extra cost can be recouped via MSAs. Hence fees should be higher for riskier companies, and at times of higher LBO environmental complexity: e.g. times of high credit spreads (Axelson et al. (2013)), and lower risk premium (Haddad, Loualiche and Plosser (2016)).

In the private equity literature, the main model of security design (or fund design) is that elaborated by Axelson, Strömberg, and Weisbach (2009). The authors argue that the central friction between GPs and LPs is the incentives GPs have to engage in negative net present value projects once LPs have committed the capital. The reason is that GPs can be better off spending LPs cash commitments even when it slightly hurts returns. This effect is particularly severe when GPs get close to their five years investment deadline. Axelson, Strömberg, and Weisbach (2009) argue that lenders act as the ex-post gatekeeper to prevent ‘GPs going for broke.’ They do not allow for the presence of MSAs in their model, but MSAs could significantly counteract GP’s incentive to invest in bad projects because they offer compensation that can be performance sensitive and is ex-post LP commitment time. An empirical implication is that portfolio company fees are higher when funds are closer to their investment deadline, i.e. when funds are older at the time of the LBO.

Recent literature analyzes the cross-section of management and carried interest fees charged across a large sample of funds. Robinson and Sensoy (2013) show empirically that funds with higher management and carried interest fees have higher gross-of-fees returns and similar net-of-fees returns compared to other funds. Similarly, Huther et al. (2015) show that GPs which use a more expensive carry structure (deal-by-deal instead of whole fund carry) have higher returns. From that stream of work, one may anticipate that GPs using extra layers of fees are those performing best. In a similar vein, we could think of ex-post discretionary fees as a way for GPs to fully capture the price for talent. Chung et al. (2012) argue that GPs capture their talent rent by raising larger funds: fees do not change but the basis goes up, and thus the profit. This is reminiscent of the mechanism in the Berk and Green (2004) model. From this literature, we conjecture that it may be optimal to start with a standard and relatively low compensation and allow GPs to adjust compensation upward using portfolio company fees as and when GPs are successful. An empirical implication is that fees are positively and primarily related to the past and current performance of GPs. However, we could also have a negative and non-linear relationship between fees and current GP performance because ex-post fees can reset the incentives of GPs whose carried interest is ‘out-of-the-money’.

Monitoring fees described above could be seen as a layer of junior debt. In private equity the tension between debt-holders and equity-holders is mainly determined by the GP’s reputation with lenders (Demiroglu and James (2010), Ivashina and Kovner (2011), Hotchkiss, Strömberg, and Smith (2014), Malenko and Malenko (2015)). On the one hand, more reputable GPs obtain debt at a lower cost and could ‘afford’ to charge more portfolio company fees. Hence, monitoring fees should increase with GP creditor-reputation. On the other hand, monitoring fees could be a commitment device used by low creditor-reputation GPs because they need to repay yearly coupons on senior debt first in order to receive regular monitoring fees. Similarly, they need to repay the senior debt in full in

order to receive accelerated monitoring fees. In this case, less reputable GPs need to charge more portfolio company fees.¹⁴

In addition, if a company is in financial distress, it is well known that equity-holders have less incentive to work hard because the benefit of their work will primarily accrue to debtholders. With an MSA in place, supervisors have a sharp incentive to generate extra cash flows because they can be compensated for it (via increased monitoring fees for example). An empirical implication is that companies that are more at risk of financial distress pay higher fees, and that fees go up in times of high general financial distress.

Despite their variety, there are common predictions of these optimal contracting views. GP fund flows should be insensitive to the amount of portfolio company fees since LPs have no reason to sanction or reward GPs as a function of their fee policy. Under these optimal views, it is unclear why GPs would rebate any fees to their LPs. In fact, GPs should retain a significant fraction of the portfolio company fees they charge otherwise the benefits highlighted above would not materialize. And we would not expect any time-cycles in the average fraction rebated.

Tax optimization

In *Tax Notes*, Polsky (2014) argues that monitoring fees lack compensatory intent and are, instead, dividends: ‘...monitoring fee payments are payments made by the portfolio company to benefit shareholders in their capacity as shareholders. While the private equity firm formally receives the monitoring fee payment, the private equity fund, which is the entity that holds shares in the portfolio company, receives all or nearly all of the economic benefit of the monitoring fees through management fee offsets. Thus, monitoring fees are non-compensatory payments that benefit shareholders, also known as dividends.’

In general, tax arbitrage could be a motivation for charging both transaction and monitoring fees. Under this view, GPs receive a special dividend at the time of investment inception (‘transaction fee’), when certain events occur (e.g. ‘fee for recapitalization’, ‘fee for asset disposal’, ‘termination fee’) and receive a regular annual dividend (‘a monitoring fee’). The regular dividend is either fixed, or expressed as a fraction of EBITDA, which then resembles a ‘dividend yield’. These dividends are dressed up as ‘services fees’ in order to be treated as an expense by the company, hence be tax deductible. LPs benefit as long as the rebate is high enough and the part of the fees that is not rebated can be seen as the compensation of the GP for intermediating this tax saving.

We derive some empirical implications from this tax arbitrage view. All else being equal, GPs that charge more fees offer more tax savings, and therefore should have higher returns and attract higher subsequent capital flows from LPs. In addition, more fees should be charged when companies

¹⁴ We thank Andrey Malenko for suggesting this possibility.

have positive earnings and tax payments because the tax savings are then immediate (rather than carried forward). This prediction should hold both in the time-series (at times of larger corporate profits) and in the cross-section. Finally, GPs should rebate at least 60% of the fees to LPs as the maximum marginal corporate tax rate is 40%.

Other related papers

Kaplan and Strömberg (2003) show that venture capital contracts between GPs and portfolio company executives are close to those predicted by financial contracting theories. Kaplan and Strömberg (2004) argue that agency and hold-up problems are important to those contracts' design and monitoring, but that risk sharing is not. Cumming (2008) shows that stronger GPs' control rights increase the likelihood that an investment exits by trade sale.

Gompers and Lerner (1999) present the first study of LPAs. Metrick and Yasuda (2010) build a model to estimate the expected revenue to GPs as a function of their LPA for a large sample of funds. Litvak (2009) offers a legal critique of these agreements. Phalippou and Gottschalg (2009) compute the value of different fee arrangements based on observed private equity fund cash flows.

More broadly, our findings are related to Jensen's (1989) conjecture that interests are well aligned between all parties in private equity. Axelson, Strömberg, and Weisbach (2009) show that the financial structure of LBO funds minimizes agency conflicts between GPs and LPs. Barber and Yasuda (2016), and Brown, Gredil, and Kaplan (2015) study whether GPs can fool LPs by manipulating net asset values when fundraising. Arcot et al. (2015) analyze the conflicting interests between LPs and GPs in the context of secondary buyouts. Outside of private equity, Cronqvist and Nilsson (2003) estimate the agency costs of controlling minority shareholders.

A large literature on 'collusion under asymmetric information' follows Tirole's (1986) work: e.g. Kofman and Lawarrée (1993), Khalil and Lawarrée (1995), Laffont and Martimort (1997), Faure-Grimaud, Laffont, and Martimort (2003), and Laffont and Martimort (2000). This literature focuses on collusive behavior between supervisors and agents where supervisors are auditors or regulators. The closest study in that literature is perhaps that of Celik (2009) who proposes that principals should contract with both the supervisor and the agent to manipulate the communication between the supervisor and the agent. In our context, LPs would offer GPs a monetary reward if the GP only signs MSAs that are approved by LPs ex-post.

Other related studies include that of GPs monitoring activities (e.g. Bernstein, Giroud, and Townsend (2014), Cornelli, Kominek, and Ljungqvist (2013), Celikyurt, Sevilir, and Shivdasani (2014)); operating performance improvements in LBOs (e.g. Cohn, Mills, and Towery (2014) and Guo, Hotchkiss, and Song (2011) for recent studies); shrouded attributes (e.g. Gabaix and Laibson (2006)); CEO fixed effects (e.g. Bertrand and Schoar (2003)); non-private equity investment funds' compensation structures (e.g. Tufano and Sevick (1997) for mutual funds; Goetzmann, Ingersoll, and

Ross (2003) and Agarwal, Daniel, and Naik (2009) in hedge funds); executive pay, with a group of papers arguing that CEOs set up their own pay (e.g. Bebchuk, Cremers, and Peyer (2011), Hartzell and Starks (2003)) while others (e.g. Kaplan (2009)) disagree.

2. Data

Data source

Our sample consists of U.S.-based companies that went through a Leveraged Buy-Out (LBO) sponsored by a private equity firm, and that had to file with the Securities and Exchange Commission (SEC). Companies subject to an LBO must file with the SEC if they are publicly traded when targeted (so-called ‘public-to-private LBOs’), if they end their private equity sponsorship via an Initial Public Offering (IPO), or if they issue publicly traded debt. SEC filings are publicly available electronically since 1995.

Our set of IPO-exited LBOs comes from the Cao and Lerner (2009) sample between 1981 and 2006, and then from Capital IQ from 2007 to 2013. The rest of our sample comes from Capital IQ: the list of public to private LBOs, and all the transactions classified as US LBOs with a TEV of \$10 million or more, excluding sponsor firms with less than five LBOs listed in Capital IQ, and selecting the sub-set of companies for which post-LBO EBITDA is available.¹⁵ In order to compare fees across companies, we need to scale them. In practice, transaction fees are expressed as a fraction of TEV. Requiring this information in Capital IQ reduces our sample by one third.¹⁶

SEC filers need to declare i) ‘material definitive agreement’ such as credit agreements and MSAs; ii) previous fiscal year ‘related party transaction’ which describes any *non-arm’s length* fee agreement worth more than \$120,000; and iii) financial information for the preceding three years. As a result, filings provide annual information on portfolio company fees. Yet, the large amount of SEC filings, changes in company name, and overall complexity of LBO transactions make the data collection process tedious and non-trivial: we spent an average of three hours per company.

Filings do not always cover all years from inception to exit of the LBO. For example, LBOs exited via IPO with no publicly traded debt are required to report fees only for the three years prior to the IPO. If the LBO is held for more than three years, we do not know whether an initial transaction fee has been paid. We exclude 112 such LBOs and end up with 592 LBOs in our sample. 140 of these 592 LBOs still have ‘incomplete’ fee information.

¹⁵ The latter filter selects companies that had to file periodic statements with the SEC. In addition, we cross check with a sample of public to private transactions taken from Capital IQ as these transactions often have publicly traded debt. In addition, as Guo, Hotchkiss, and Song (2011) and Hotchkiss, Strömberg, and Smith (2014) also assembled datasets of LBO sponsored companies that filed with the SEC, we also use their data to cross-check ours.

¹⁶ We rescue 40 observations by using ‘total asset’ value post LBO reported by Capital IQ. Regressing TEV on total asset (in the sample for which both variables are available) generates a unit slope and an R-squared of 70%; showing that this substitution is reasonable.

Descriptive statistics: Portfolio Company Fees

We begin by analyzing key descriptive statistics drawn from the 454 LBOs with ‘complete’ fee information, i.e. they are exited and had to report to the SEC their related party transactions from investment inception to end. We distinguish between five fee categories. As described in the previous section, the LBO transaction fee is for ‘financial advisory services and capital structure review’ in connection with the acquisition of the LBO target company. Similarly, transaction fees may be charged when GPs sponsor an add-on acquisition for that LBO target company (the latter being called a platform investment in this case). We label these fees ‘add-on transaction fees.’

Monitoring fees are charged to compensate for services broadly defined as ‘certain management, consulting and financial services’ made during the life of the investment. They are also sometimes referred to as advisory fees and are not contingent on services being actually carried out. We distinguish between the regular monitoring fees, i.e. those paid during the investment’s life, and the accelerated monitoring fees, which are paid at exit (also referred to as ‘termination fees.’)

There are a number of additional portfolio company fees. For example, director fees compensate for serving as directors on the board of portfolio companies. As they are a priori arms’ length related party transactions they do not need to be recorded in SEC filings. An important fee seems to be ‘break-up and topping fees.’ We do not see them in SEC filings. It is unclear how these fees are charged: they may be rolled up in the transaction fees of successful acquisitions and thus indirectly recorded as transaction fees.

The first line of Table 1 – Panel A shows that different fees are charged at different frequencies. The most frequent fee is the LBO transaction fee: only 25% of the companies do not pay it. However, only 16% of companies do not pay any of the fees.

The most controversial fee is probably the termination fee (a.k.a. accelerated monitoring): of these five types of fees it is the only type that generated a fine from the SEC (as of 2015). We observe that as many as 72% of the LBOs do not charge any termination fees. Interestingly, the majority of MSAs do have a provision for termination fees, which means that GPs voluntarily forego this fee in most cases. Overall, termination fees represent only 15% of the whole fee bill. Transaction fees represent nearly half of all fees (45% for LBO + 4% for add-ons).

< Table 1 >

To put these fees into perspective we need to scale them by a measure of company size. Transaction fees and ‘other’ fees are often quoted as a function of TEV while monitoring fees tend to be annuities and/or a function of EBITDA. We use different measures of company size: TEV (including that of any add-on acquisition), total EBITDA generated during the life of the investment, total sales generated during the life of the investment, and the equity deployed by LBO funds in that transaction (again, including that of any add-on acquisition).

Fees add up to 1.75% of TEV. The two transaction fees together represent 0.88% of TEV. The two monitoring fees together are of similar magnitude at 0.72% of TEV. Fees are about half when expressed as a function of sales and about twice as much when expressed as a fraction of EBITDA.¹⁷ Specifically, fees represent 3.6% of the total EBITDA, i.e. about 1% of EBITDA per year (the average holding period is about four years). Interestingly, the relative transaction fees and monitoring fees both coincide with the lower bound of the range that Metrick and Yasuda (2010) gather via interviews: 1% to 2% for transaction fees, and 1% to 5% of EBITDA per year for monitoring fees.

Table 1 – Panel B shows the fees broken down per exit channel. Not surprisingly our sample is dominated by IPO-exits but we have many exits via sales (both to strategic buyers and financial buyers), and bankruptcies. In fact, our fraction of bankruptcies, both in number (15%) and value (19%), are close to those reported in the literature (Hotchkiss, Strömberg, and Smith (2014) estimate default rates at 17.9%).

All of the fees are virtually the same across exit types except for accelerated monitoring fees. Recall also that accelerated monitoring fees are contentious because they represent a payment for services that will not occur. But IPO-exits are only partial exits. GPs stay involved with the companies past the IPO date. An explanation for the finding that GPs often forego charging this fee and for its mere existence (paying for a service that will not be rendered) is that GPs get paid at the time of the IPO for the monitoring they might continue to do afterwards. When the exit is not an IPO, monitoring stops and termination fees are hardly ever charged then.

LBOs that went bankrupt have the same transaction fees and regular monitoring fees as the rest of the sample. These LBOs were not a priori more burdened than other LBOs fee-wise. More generally, this indicates that there is no obvious cash transfer away from debtholders.¹⁸

Table 1 – Panel C shows the fees broken down per year of LBO inception. About one third of the LBOs took place before 1998. In dollar terms however they represent only 17% of the sample. The 1999-2002 period was relatively cold for the LBO industry. A boom started in 2003-2004, accelerated in 2005-2006 and reached a peak in 2007-2008. What is striking is the consistency of the fees across these significant industry cycles: 1.74%, 1.65%, 1.91%, 1.86%, and 1.53%. We have only 19 LBOs that occurred post-crisis and fees seem higher due to higher accelerated monitoring fees. Only accelerated monitoring fees and ‘other’ fees exhibit more of a cycle, and the cycles seem to be the opposite. Accelerated monitoring fees seem highest when other fees are lowest. Yet, there are no dramatic changes from one period to the next for either one of these fees.

¹⁷ Investments being held on average for four years and TEV being about eight times yearly EBITDA, TEV is thus about twice as much as total EBITDA.

¹⁸ This is nonetheless a point of tension. There have been lawsuits where lenders have accused GPs of charging excessive fees prior to companies going bankrupt. E.g. Buffet’s restaurant lawsuit was settled for \$28 million.

The important take away from this panel is that although portfolio company fees started to be widely discussed in the press and practitioner reports post-crisis, they have existed since as far back as we can get. They are not a phenomenon that appeared in the 2004-2008 boom before disappearing with the crisis. They have always been around and with similar magnitudes throughout.

Table 1 – Panel D lists companies that paid the most fees. The magnitudes seem large, with the top five companies alone paying a total of \$2.59 billion (in 2014 US dollars). At the top of this ranking is TXU which is also the largest LBO to-date. The fees total \$666 million even though it did not charge any termination fees, nor add-on transaction fees. Relative to TEV, it is below the overall sample average.

Three of these top five payers exited via an IPO (First Data Corp, HCA, Freescale Semiconductor). Harrah's entered into an IPO too but only a small part of the company was floated. A few months later, it filed for bankruptcy. The rest of the LBOs in the 'complete sample' paid nearly \$12 billion in fees, bringing the total to \$14.5 billion. Note that all figures are brought to 2014 US dollars using the CPI index. This has an impact on absolute amounts but not on relative amounts.

Overall fee bill

We now add the 'incomplete' sample. This sample includes 58 LBOs that are not exited, hence their fee series is incomplete by definition. In addition, there are 80 LBOs that are exited but had to file with the SEC for only part of the investment period. Adding these 138 incomplete observations to form an augmented sample not only minimizes the loss of information on these partial fee time-series but also makes the sample more representative: most of these incomplete observations are not IPO-exited deals (that is why they are more likely to be incomplete.) Yet, we need to complete the time-series of monitoring fees in that sample to avoid introducing a downward bias in fee estimates. The procedure is detailed in an internet appendix (not included here due to space constraint).

Table 1 – Panel E shows that in the augmented sample of 592 observations, we have \$10 billion of transaction fees, \$8.1 billion of monitoring fees, and about \$1.5 billion of 'other' fees, bringing the total to nearly \$20 billion. The aggregated TEV is \$1.12 trillion (2014 dollars), which means that in this augmented sample fees are still about 1.75% of TEV.

The rest of the paper focuses on transaction fees and monitoring fees because we cannot impute 'other' fees for the part of the sample that is incomplete. In addition, although reported as 'non-arms' length related party transactions to the SEC, the 'other' fees are typically fees for clearly identified investment banking services. Notice that we do not record director fees, break-up fees, expense claims, and kick-backs from portfolio company suppliers. We label portfolio company fees as the sum of transaction fees and monitoring fees; but the actual portfolio company fees are more than what we report here.

Economic relevance: A back of the envelop calculation using CalPERS data

To put these fee amounts in context, we make a back of the envelop calculation using CalPERS data. By the same token, this exercise further illustrates some of the mechanics we discussed above.

As shown in Table 1 - Panel A, portfolio company fees represent 6.4% of the aggregate equity value invested by GPs on behalf of their LPs. CalPERS invested \$41.4 billion across private equity funds with vintage years 1991 to 2008, and would have then paid \$2.6 billion in portfolio company fees. As specified in LPAs, however, a fraction of these fees is rebated against the management fees due. How much is the average rebate rate?

Carlyle, KKR, Blackstone and Apollo – the four largest LBO firms – are publicly listed. They publish their revenue sources every quarter. Apollo collected \$1.28 billion (between 2007 and 2012) and rebated 61% of this amount. KKR collected \$2.4 billion (from 2007 to 2014) and rebated 39% of this amount. Other GPs do not disclose this information. We assume that the effective rebate rate for 1991-2008 vintage years is 50%, implying a rebated amount of $\$2.6 \text{ billion} \times 50\% = \1.3 billion .

We assume that the management fees *due* by CalPERS is 2% of capital committed for the funds first five years and 1% of half of the capital invested for another five years. We do not discount for simplicity, and obtain \$5.4 billion.

The amount of management fees called by GPs would then be \$5.4 billion minus \$1.3 billion, i.e. \$4.1 billion. CalPERS current reporting system (and that of most other LPs) would record \$4.1 billion of management fees paid. Note that CalPERS provide the details of the management fees paid in its comprehensive annual report since 2003. The last fiscal year available is 2013, and over these eleven years, management fees paid add up to exactly \$4.1 billion.¹⁹

CalPERS recently reported the carried interest paid on the sample of non-liquidated funds (\$3.4 billion of realized carry plus \$1.7 billion of unrealized carry). We estimate a carry for all 1991-2008 funds and find it to be \$5.3 billion. When we compare our estimate to the actual number reported by CalPERS for the overlapping sample, we are very close and thus confident this is a good estimate.

To sum up, over the last 25 years, CalPERS paid: \$4.1 billion of management fees, \$5.3 billion of carried interest, and (estimated) portfolio company fees of \$2.6 billion, which they have not tracked so far. In comparison to the two widely known fees, portfolio company fees do not seem negligible for LPs.

< Table 2 >

¹⁹ To be precise, one would need to add the years 2002 and before, plus year 2014, which has not been published yet, and subtract fees of vintage years 2009 to 2013; our estimate of the sum of this all is close to zero.

3. Fees and LBO characteristics

Descriptive statistics: LBO characteristics

Table 2 presents descriptive statistics for the sample of LBO transactions. The unit of observation is an LBO. On average, monitoring fees are about \$14 million and transaction fees are \$17 million. TEV (which includes that of any add-on acquisition), averages \$1.9 billion. The median is lower at \$711 million - this is due to some very large deals in our dataset (e.g. Energy Futures). As our LBOs have either issued public debt, went through an IPO, were public-to-private, or some combination of these events, they tend to be larger than average.

The rest of the descriptive statistics are in line with those shown in the literature and in practitioner reports, indicating that besides a tilt towards larger transactions, our sample is representative. Leverage averages 63%. The average holding period is 4.1 years with an interquartile range of two to six years. The average TEV to (Last Twelve Months; LTM) EBITDA ratio is 9.4 and the average Debt to LTM EBITDA is 6.2. These two figures are high, but in line with what is usually reported for large LBOs. The median LBO takes place in 2002. Hence our sample counts a large number of LBOs that occurred prior to the 2003-2008 boom. 37% of the LBOs have made add-on acquisitions. We also estimate a cash-on-cash (equity) multiple realized by GPs and find that it averages 2.83, with a median at 1.86, which is in the ballpark of what is reported in other studies; see e.g. Lopez-de-Silanes, Phalippou, and Gottschalg (2015).

Relative to TEV, monitoring fees are more widely distributed than transaction fees, but relative to EBITDA, it is the opposite. On average there are 1.76 GPs sponsoring an LBO and together they own 86% of the equity; the rest of the equity is usually mostly owned by management. The amount of fees collected per dollar of equity intermediated by GPs is therefore higher than per dollar of TEV: nearly 4% on average for both monitoring fees and transaction fees.

The Constant Average Growth Rate (CAGR) per annum for both Sales and EBITDA is 17%, which is high but includes externally financed add-on acquisitions. Interestingly, the (present value of) Earning Before Tax (EBT) during investment life is negative on average. This is mainly due to debt interest payments. As a result, we also observe that the average (present value of) corporate taxes paid during investment life is nearly zero, i.e. there is as much corporate tax credit cumulated as tax paid overall. The benefits of further lowering corporate taxes using portfolio company fees is probably more limited than at first sight.

Regression analysis

We analyze the determinants of fees paid by a given company. Table 3 – Panel A shows results with the natural logarithm of *monitoring* fees as the dependent variable whereas Table 3 – Panel B shows results with the natural logarithm of *transaction* fees as the dependent variable. We therefore analyze absolute fee levels (in log) and use as independent variables (the log of the present value of) i) yearly

EBITDAs generated during the life of the LBO; ii) debt raised (at LBO inception and thereafter); and iii) Total Enterprise Value (at LBO inception, plus add-on acquisitions).²⁰ The rest of the ‘base’ control variables are those with a valid entry for each observation.

The first three specifications test whether fees are time dependent. Ex-post adaptation fees may be higher when it is difficult to execute and monitor LBOs because GPs need to exert more effort. The first specification introduces proxies for ‘difficult’ LBO times: level of credit spreads (Axelson et al. (2013)) and expected equity risk premium (Haddad, Loualiche, and Plosser (2016)).²¹ The second specification introduces a scaled measure of buyout activity (constructed by Haddad, Loualiche, and Plosser (2016), similar to that proposed by Kaplan and Strömberg (2009)). None of these three variables are statistically significant. To assess whether any alternative proxies for business or industry cycle could play a role, we introduce quarter of LBO-inception fixed effects in the third specification. The increase in R-squared is negligible.

Next we control for holding period and thus run the specification on the sub-sample of realized investments. Holding period is not statistically significant: GPs do not charge more or less depending on how long they hold the investment for. We also note that results are similar for the other explanatory variables even though we include only realized investments here.

The next three specifications introduce company characteristics discussed in the hypothesis section. We start with a dummy variable that is equal to one when Earnings Before Tax (EBT) is negative (and zero otherwise).²² Although the tax benefits of monitoring fees are lesser when EBT is negative, we observe a positive and not a negative coefficient (albeit not significant).

The sixth specification introduces EBITDA growth (realized during the investment), and we find that it is not statistically significant. As we may be concerned with reverse causality we also use the growth in EBITDA prior to the LBO and the ratio of TEV to EBITDA at LBO inception as a measure of expected growth. None of these variables are significant either (non-tabulated). To evaluate risk, we use EBITDA volatility and find that it is not statistically significant (EBITDA volatility prior to the LBO is not significant either; non-tabulated). We note that the amount of debt

²⁰ We also run this analysis with ratios: fees relative to TEV or EBITDA, control for leverage ratio (Debt to TEV), buying multiple (TEV to EBITDA). Results are similar: company characteristics are not significantly related to fees.

²¹ We take the value of these variables in the quarter of investment inception. Results are similar if we use the average of these variables during the life of the investment. Alternative proxies for LBO cycles are not significant either. We used the spread between the ratio of EBITDA to Enterprise Value and high yield rate proposed by Kaplan and Strömberg (2009) to measure the expected return on LBOs. We used the VIX index which measures implied volatility from option prices, and the debt market overvaluation proxy of Harford, Martos-Vila, and Rhodes-Kropf (2014).

²² We do not observe EBT and EBITDA during the investment’s life for 16 investments. For EBITDA the relationship with TEV is strong (over 90% correlation) hence we inferred the missing EBITDAs from TEV so that we do not lose these observations in the base specification. We cannot do it with EBT. This specification, therefore, also show results if we exclude observations for which we inferred EBITDAs. Results are similar.

raised is not related to fees but it is unclear whether more debt is associated with higher risk.²³ Finally, in the last specification, we control for the estimated return on equity realized by GPs on their investment and find no relation.

Among the core control variables we note that EBITDA is strongly related to monitoring fees, but not TEV. More fees are charged if more GPs are investing in the LBO and there is a positive time trend in amount of monitoring fees charged.

Results in Panel B are overall similar. The main difference is that TEV is related to transaction fees. This was expected since these fees are often expressed as a function of TEV. More surprisingly is the significant positive relation with EBITDA. It means that at the time of LBO inception a higher transaction fee is charged on companies with higher anticipated EBITDA.

We conclude that fees are insensitive to business and industry cycles, and to fundamental company characteristics such as earnings growth and volatility. In non-tabulated results, we use other characteristics available in Capital IQ (e.g. transaction type: divisional buyout, public-to-private) and find that these variables are not significant either. We control for industry fixed effects throughout and the impact of these fixed effects on R-squared values is negligible (non-tabulated; we also used different measures of industry and obtain similar results). We also run these specifications with fee ratios as dependent variables: Monitoring fees to EBITDA, Transaction fees to TEV, Monitoring fees to Equity, Transaction fees to Equity. The results are similar.

< Table 3 >

4. Fees and GP characteristics

Proxies for LBO riskiness, difficulty to monitor, tax liabilities do not appear to be related to amounts charged. This is *not* consistent with what either the ‘risk-sharing’ or the ‘tax’ hypotheses would have predicted. We now test the optimal contracting views that predict that it is GP characteristics that are important (e.g. past GP performance, GP reputation).

Descriptive statistics: GP characteristics

When several GPs invest in a given LBO they do not all receive the same amount of fees. Transaction fees are often split according to ownership; it is less often the case for monitoring fees. There are on average 1.76 GPs invested in a given LBO and thus 1,044 observations of pairs of a ‘GP participating in an LBO.’ Descriptive statistics for this sample are shown in Table 4. GPs charge on average \$7.8 million in monitoring fees and \$9.6 million in transaction fees. We observe more zeros here, with more than 25% of the GP-LBO pairs having no monitoring fees (same for transaction fees). EBITDA and TEV are scaled by GP ownership so we can compute meaningful ratios at the GP level:

²³ As suggested in, e.g. Gompers, Kaplan, and Mukharlyamov (2016), companies that are ex-ante *less* risky are financed with more debt during an LBO.

monitoring fees to EBITDA and transaction fees to TEV. In addition, we construct the average (relative) fee charged by a given GP in prior LBOs. We have 375 unique GPs, hence the number of observations here drop by as much, down to 669.

We match our sample to the Preqin database that contains the size and vintage year of 22,675 private equity funds. We compute the amount raised by a given GP post-LBO and pre-LBO. Fundraising statistics cannot be computed for GPs that do not raise external capital (e.g. captive funds run by banks, LPs co-investing) and excluding these cases reduces our sample size by 27%. In addition, we match our sample to another Preqin database which contains performance data for 7,328 private equity funds. Following Harris, Jenkinson, and Kaplan (2014), in the absence of detailed cash flow data, we use cash on cash fund multiple as a measure of fund performance: the sum of all distributions plus the residual value of ongoing investments in a fund divided by the sum of all of the capital invested, net of all fees for LPs (including monitoring and transaction fees, and reflecting any rebated amount). Pre- (*post-*) LBO GP performance is value weighted and includes funds raised by the GP over the preceding (*following*) ten years. The average multiple in our sample is 1.98 pre-LBO and 1.65 post-LBO; similar to statistics reported in the literature (e.g. Harris, Jenkinson, and Kaplan (2014)).

We also match our sample to the Preqin Limited Partners database that contains 29,409 PE fund investments made by 2,576 LPs. Following Cavagnaro et al. (2015) we proxy LP skill by the average performance of the private equity funds an LP invested into. Specifically, for each LP, we compute the average performance (measured by Cash Multiples) of the private equity funds it has invested into (as of the time of the LBO); this variable is ‘LP past performance’. Then, for each GP we compute the average ‘LP past performance’ across all of its LPs and label this ‘LP skills.’

Next, we construct two important variables proposed in the literature. First, we compute the GP time-varying market share to proxy for GP’s reputation with lenders as suggested by Demiroglu and James (2010): the number of LBOs sponsored by a GP divided by the total number of LBOs observed over the past 36 months (using Capital IQ).²⁴ The average market share is small at 0.32%. Even the top quartile market share is only 0.43%; this is because we equally weight each LBO. The main reason why researchers have not value weighted is that TEV information is often missing.

Second, we compute a more general measure of GP (lack of) reputation, proposed by Barber and Yasuda (2016): this variable is equal to one if the GP does not have a top quartile fund in its track record, and zero otherwise. GP lacks reputation in 35% of the observations in our dataset.

We measure the amount of capital raised by each GP post financial crisis (vintage years 2009 to 2015) and the amount of capital raised over the ten vintage years preceding the crisis (1999 to 2008). On average the drop in fundraising between these two time periods is 48%. On the

²⁴ Hotchkiss, Strömberg, and Smith (2014) use GP age as a proxy for reputation. Ivashina and Kovner (2011) use a measure of GP reputation with lenders that comes at the cost of manually matching with Loan Pricing Connector.

performance front, pre-crisis funds have on average a cash on cash fund multiple of 1.7 (value weighted).

Next, we use the Preqin database on private equity fund Terms and Conditions. This dataset contains the key items in the Limited Partnership Agreement (LPA) of 2,660 private equity funds. Of the 636 buyout funds in that dataset, 310 have information on the rebate rate applied to transaction fees (information is not available for monitoring fees). For the other 326 funds, nothing was mentioned about rebates which could mean that there is no rebate, or that the fund does not charge any portfolio company fees. As virtually all GPs charge some portfolio company fees, these missing observations probably correspond to zero rebates. Instead of assuming no rebate in those cases, we exclude these observations. In addition, there are many exceptions and rules for the calculation of the rebate, which further contribute to making the headline figure and our statistics an upper bound for the rebate rate. To reflect this situation we label the variable ‘maximum rebate rate for funds of that vintage and size.’ Importantly, the dataset is anonymous. As the rebate rate varies little among funds of the same vintage year and size category (defined by Preqin), we compute an average rebate for each group and assign that rate to each fund-LBO pair in our sample. On average the maximum fee rebate is 80%, while the interquartile range is 65% to 100%.²⁵

Finally, as in Acharya et al. (2013) we collect the biographies of the founding partners for each GP and record the fraction of these partners with graduate degrees (on average 69%), with a consulting background (on average 10%), and with an investment banking background (41%).

< Table 4 >

Regression analysis: Fees charged by a given GP

In this sub-section, we test the GP-based hypotheses described in section 1.3. The dependent variable is the fee charged by a given GP in a given LBO.

Table 5 shows the results for monitoring fees relative to EBITDA.²⁶ We scale monitoring fees by EBITDA because results in Table 3 indicate that monitoring fees are primarily related to EBITDA. The first specification includes all the characteristics that are available for all the observations. Similar to what we find in Table 3, more monitoring fees are charged per GP when there are more GPs sponsoring the LBO. Perhaps surprisingly, GPs with a higher equity ownership in the LBO charge lower (not higher) monitoring fees.

We first note the statistical significance of the dummy variable that is one if the GP made this investment after 2003 and has filled an S-1 form and is zero otherwise (labelled ‘GP going public’). We will motivate and zoom in this finding in details in the next section.

²⁵ We also have access to a proprietary dataset of 300 LPAs. 140 LPAs are for buyout funds investing in the US. Statistics on rebate rates in our proprietary dataset are consistent with those of Preqin; correlation is about 70%. We also have the LPA of 35 funds in our sample, covering about 60 LBOs, i.e. about 10% of our sample.

²⁶ In contrast to Table 3 we work with scaled fees. This is because we compare fees over time in several specifications. Since fees are related to measures of company size, we need to compare scaled fees rather than absolute fee levels.

Cavagnaro et al. (2015) show that LPs vary in terms of skills and exhibit performance persistence. GPs backed by LPs with higher track record are therefore more likely to be backed by more skilled LPs. In the second specification, we observe that most skilled LPs invest less in GPs with high monitoring fee. This result is not consistent with any of our hypothesis and we will discuss it further in the conclusion.

In the third specification, we introduce past fees charged by each GP, and the effect is large. The coefficient is 0.75, the *t*-statistics near 7 and the R-squared doubles (35%). Importantly, in these regressions, we cluster standard errors at the GP level which decreases *t*-statistics compared to what is obtained with other clustering choices (this is due to the GP-level persistence in fees). The finding of a strong persistence in fee policy implies that GP characteristics drive differences in fees charged.

We introduce a set of GP characteristics to test empirically the series of GP-based ‘optimal contracting’ views described in section 1.3. We begin with proxies for GP reputation (market shares, GP lack of reputation, GP age, amount of capital raised previously). None of these four proxies are statistically significant. Results are the same if these four control variables are included one at a time. We also find that the age of the fund at the time of the investment is not significant either.

Next, we study founders’ backgrounds. The motivation here is twofold: i) Acharya et al. (2013) show that prior experience (being a consultant versus investment banker) has a material influence on the GP strategies;²⁷ ii) monitoring fees may be related to ‘consultant’ type of work while transaction fees may be related to investment banking type of work, hence having prior experience in those fields may matter. We find that having partners with graduate degrees and a consulting background are both positively correlated with monitoring fees.

A set of variables related to GP past performance is added in the sixth specification. We use i) the average fund multiple generated on prior funds to measure past performance at the time of LBO inception; ii) a dummy variable that is equal to one if the fund investing in the focal LBO has an IRR above 8% to proxy for ‘GP is in the carry’; iii) the volatility of the multiple generated across previously raised funds as a measure of risk. None of these variables are significant. We tried multiple combinations (use of IRR instead of Multiple, change in fund weighting schemes, use only the performance of the fund that is invested in the focal LBO etc.) We also run these specifications with fee level as a dependent variable rather than scaled fees, and with each control variable included one at a time. Results are similar. Past and current performance measures are never significant.

To preserve space we do not tabulate the equivalent results for transaction fees. Results are similar. There is strong persistence in transaction fees, transaction fees are negatively related to LP-skills and unrelated to measures of GP reputation and past performance. We find however that older

²⁷ Reduction in sample size forces us to drop the variable called GP going public as it is zero for most observations.

GPs charge less transaction fees, and GP with more volatile past performance charge higher transaction fees. GP background variables are not significant here.

In non-tabulated results we also run F-tests for the statistical significance of fixed effects, as in Bertrand and Schoar (2003). We find that quarter, year, and industry fixed effects are all not jointly significant. In contrast GP fixed effects are highly statistically significant.

To sum up, results in Table 5 are at odds with ‘optimal contracting’ views.

< Table 5 >

Regression analysis: Flow-Fee sensitivity analysis around time of LBO

We investigate the impact fee policy has on fund raising effort by GPs. This is a way to test whether LPs reward or penalize GPs that charge more fees. All of the hypotheses discussed in section 1.3 predict that GPs charging more portfolio company fees are not penalized by their LPs: capital flows should be either neutral or positively related to portfolio company fees.

Table 6 – Panel A shows the results of a multiple regression analysis where the dependent variable is the increase in capital raised pre- to post- LBO for a given GP. We find that the performance pre-LBO is strongly related to the change in capital raised. This is consistent with the literature: there is a strong flow-performance relationship in private equity (e.g. Robinson and Sensoy (2013)). None of the other explanatory variables are significant. In particular, fees do not matter. This result is robust to several changes in specification: e.g. we varied the post-LBO starting date (1 year, 2 years, etc. after LBO inception, or starting when the LBO is exited; not tabulated).

Evidence in Table 6 – Panel A is consistent with LPs not minding these fees but it is not generally consistent with an LP-GP collusion to save on taxes.

Regression analysis: Flow-Fee sensitivity analysis around the Global Financial Crisis

Arguably, portfolio company fees became a point of tension and growing concern only after the financial crisis. The main association of LPs (ILPA) became vocal about these fees, asking that they should at least be 100% rebated to LPs. Newspaper coverage of these fees became more prevalent. The Dodd-Frank act included a provision for the SEC to investigate potential conflicts of interest in private equity, including an investigation of these fees. In a speech in May 2012, the SEC said it found violations of security laws for about half of the GPs under investigation. Two years later the SEC started to fine certain GPs. Google trend time-series for ‘management services agreement’ has zero hit up until November 2009, peaks then, and stays equally ‘googled’ thereafter. The 2008 financial crisis may then offer an opportunity to measure LPs reaction to portfolio company fees becoming public information.

The results in Table 6 – Panel B contrast with those in the preceding table. Both monitoring fees and transaction fees are consistently negatively related to the growth in capital raised. The cross effect between fees and distance to the crisis shows that GPs with low transaction fees closer to the

financial crisis raised even more capital (all else equal). Hence GPs that charged high transaction fees in the earlier part of the sample and less so in the latter part of the sample are not as penalized on the fundraising front as GPs in the opposite situation. We also note that the rebate rate to LPs matters: GPs that rebate more raise more capital post crisis.

We still observe a strong positive relationship between growth in capital raised and past performance. Note also that we clustered standard errors at the GP level. This is fairly draconian as this effectively considers all observations from one GP to be unique. Other choices of clustering (e.g. a double clustering on year and GP, or year and portfolio company) lead to higher t-statistics.

The finding that higher fees coincide with significantly lower future fundraising is perhaps the result that is most difficult to reconcile with either the tax view or the optimal contracting view. LP's welfare is increasing in the amount charged in fees according to the tax view. Under the optimal contracting view there should be no significant relationship. It is plausible that GPs who charged more were those facing challenges with their investments and that is why they raised less money going forward. Yet, the effect holds after controlling for past performance. Hence LP's reaction is beyond the effect of poor performance. It means that fees per se make LPs walk away from high-portfolio-company-fee GPs. This finding is however consistent with more skilled LPs having always avoided GPs charging the highest portfolio company fees (see Table 5 – specification 2).

Although we find strong persistence in fees, it is possible that GPs that anticipate getting out of business just increase fees dramatically. That is, they syphon what is left on the portfolio companies' cash account. To test for this hypothesis, the fourth specification shows how changes in capital flows relate to a change in fee. We do not see any effect.

< Table 6 >

These results may feel 'black box' at this point; and it is perhaps instructive to provide some economic magnitudes. Panel A – Table 7 lists the GPs with the lowest fees. These GPs have a total fee to TEV ratio below 1% and a total fee to EBITDA ratio below 2%. In fact, there is a gap between these GPs and the rest of the GPs. The GP with the highest fees in this list charges 0.8% (of TEV) and 1.4% (of EBITDA), while the next more expensive GPs charge respectively 1%, 1%, 1.1%, 1.2% (of TEV) and 2%, 2%, 2%, 2.1% (of EBITDA).

The GPs listed here have all raised funds post-crisis. A few of these GPs raised significantly more post-crisis than pre-crisis and press coverage of these fundraising events indicate that these GPs are in high demand; we illustrate this in the columns to the right of the panel.

Panel B is clearly different. We list the top quartile GPs in terms of fees (anonymized). It is important to bear in mind that this list is indicative rather than definitive. A number of assumptions are made to reach a per GP figure, the ranking also somewhat varies as a function of the scaling choice. We choose TEV and EBITDA based on our empirical results but other choices lead to slightly

different rankings. Finally, we only have a subset of the investments made by a GP. There is significant persistence which gives some comfort that a sub-sample can provide a good proxy.

With these caveats in mind we observe that nearly half of these top fee quartile GPs did not raise a fund post crisis which basically means that they are out of business. Most of the GPs that did raise a new fund raised less than pre-crisis. There are nonetheless some exceptions. From the number of investments and TEV we see that none of the largest six GPs are part of this list. In particular, Blackstone which is the only GP fined by the SEC on monitoring fee practices, is not part of this list.

We also note the wide dispersion in fees. GPs in Panel A charge close to zero whereas in panel B some GPs have charged more than 10% of EBITDA and some GPs have charged more than 5% of TEV. Moreover, the number of observations per GP and amount invested by GP in Panel B show that the large and most ‘famous’ GPs are not part of this list. This indicates that the SEC has not focused on GPs that charged extreme fees, but instead seems to have focused on ‘famous’ GPs.

< Table 7 >

GPs selling their own company and change in fee policy

There is an interesting and potentially relevant event we can study here: in 2007-2008, three GPs filed an S-1 form.²⁸ Blackstone filed an S-1 on June 21st 2007, KKR filed an S-1 on July 3rd 2007, and Apollo filed an S-1 form on April 8th 2008. In these forms GPs detail their fee income, including portfolio company fees, so that potential investors can value accurately the ‘GP.’

A large literature, starting with DeGeorge and Zeckhauser (1993), argues and shows empirically that the incentives of managers to report increased revenues in the three years prior to the IPO are “strong”. However, as modelled by DeGeorge and Zeckhauser (1993) the relationship between the decision to go public and an increase in fees might go the other way: those GPs that anticipated an unusual surge in fees decided to go public.²⁹ In other words, we need to separate out a timing story from a manipulation story.

First, we note that in our context, there are six GPs that are standing out by their size and three of them ‘sell’ part of their shares while the other three do not (Bain Capital, Carlyle and TPG). In Table 8 – Panel A, we show that past performance and past capital raised are similar across these six large GPs. This is important because under the timing story, GPs who sold shares are those with superior reputation and this is what enabled them to both sell their shares and raise their fees. In other words, superior reputation is what causes both the selling event and a change in fees. In the private equity literature, reputation has been proxied by measures of past performance (e.g. Barber and Yasuda (2016)) and past deal volume (e.g. Demiroglu and James (2010)). Under these measures, the two sets of GPs seem very similar. This is a first indication that the validity of the timing

²⁸ The S1 form is an SEC filing used by companies planning on offering shares to the public.

²⁹ This hypothesis requires that the market does not have perfect foresight regarding these fees. Otherwise, it would price the trade-off between more fees now and more fees later. But note that these fees were essentially unknown back then.

argument is not obvious. Moreover, comments in the press at the time indicate that GPs had different underlying philosophies, rather than different market timing opportunities.³⁰

In our setup, we have an additional way to separate out the timing story from the manipulation story (although imperfect). An important aspect is that the two types of portfolio company fees should affect valuations differently. On-going ten-year fixed monitoring fee contracts have a larger impact on investment company valuations than one-time past transaction fees. The latter fees are non-recurring while the monitoring fees are future contractual obligations that will be paid. Under the manipulation story, unlike under the timing story, monitoring fees should increase more than transaction fees.

Table 8 – Panel B shows fees for LBOs executed prior to 2002 and for LBOs executed in 2003 or later (pooled observations per GP). In the first sub-period, the three selling GPs charged lower monitoring fees (except for GP 2) than the other three large GPs and charged a similar amount to the rest of the GPs. The same is observed for transaction fees.

Post-2003, we observe that monitoring fees (relative to EBITDA) increase by a staggering 80% for the three GPs that sell part of their own company. Their transaction fees also increase but more modestly: 32% overall. In contrast, two of the other three large GPs kept their monitoring fees constant. GP 4 had abnormal monitoring fees pre-2002 and then charged fees in line with the average post-2003.³¹ The rest of the GPs increased monitoring fees relative to EBITDA by 35% and slightly decreased their transaction fees.

Note that the release date of the S-1 form is known, but some preliminary S-1 forms were filed and circulated prior to this. In addition, we do not know when GPs took the decision to sell part of their company. This means that the event is not precisely dated. By default, as preliminary forms were filed in 2006 and the last three fiscal years of revenues are discussed in those forms, we compare fees charged by GPs up until 2002 with those they charged from 2003 onwards. In robustness tests, we use other break years (2004, 2005) and find similar results (non-tabulated).

There are hypotheses other than the timing and manipulation stories that one may postulate. For example, GPs who prepare to sell their company suddenly start to monitor more and charge higher monitoring fees as a result. However, it is commonly believed that GPs are highly incentivized to work as much as possible via the earning of carried interest and fees from managing future large funds (see Chung et al. (2012)). It is difficult to think that GPs need outside shareholders to work harder. In addition, Table 8 – Panel A shows that we do not see much difference in performance between the two sets of GPs (except for GP 1). If the GPs that went public increased monitoring, it does not seem to trigger an increase in performance.

³⁰ A publicly traded private equity firm was seen as an oxymoron by some observers and practitioners.

³¹ GP4 had large monitoring fees pre 2002 because of several quick flips: held companies for about one year then brought them public and charged a termination fee. Hence compared to one year of EBITDA these fees were large.

We acknowledge that the experiment is imperfect. Yet, we note i) the strong economic magnitudes; ii) the difference between changes in monitoring fee and transaction fee; and iii) the performance before and after the decision to sell shares is similar. These findings may indicate that GP patience plays a role in the determination of portfolio company fees. GPs that are under pressure to generate high income in the short run increase fees that are more discretionary and less salient.

< Table 8 >

Regression analysis: The rebate rate and other fee dimensions

The last empirical test we run is on the rebate policy. We use the 2014 Terms and Condition database of Preqin. As explained above, these rebate rates are upper bounds.

Table 9 – Panel A shows that the average maximum rebate rate is about 80% and rose significantly in 2011. From 2011 on, it stayed at about 85%. Table 9 – Panel B shows that there are basically three different rebate rates: nearly half of LPAs offer a 100% refund of portfolio company fees; about a quarter have an 80% refund and another quarter have a 50% refund.³² It is somewhat puzzling that only three rates are used. As mentioned in section 1.3 (hypothesis), the high frequency of the 100% rate is difficult to reconcile with optimal contracting views. Similarly, the frequency of the 50% rebate rate is difficult to reconcile with the tax view.

100% refunds are difficult to explain for any optimal contracting theory. If GPs do not retain any of the fees charged to the agent, why would these fees be charged in the first place? None of the economic rationales we put forward can a priori explain a 100% rebate rate. A 100% rebate rate is most consistent with the tax view. However, these rebate rates are upper limits. There are sometimes many exceptions that make the effective rebated rate lower than what Preqin would record. If so, the other hypotheses cannot be rejected. In contrast, the tax view is difficult to reconcile with a quarter of the LPAs offering a maximum rebate rate of 50% because hardly any company has a marginal tax rate of 50% or more.

Table 9 – Panel C shows that LPAs with the highest rebate are those that are most ‘LP friendly’ on each of the other aspects of the fee contract: they are more likely to charge 2% or less in management fees, have a hurdle rate of 8% or more, charge a ‘whole fund’ carried interest (instead of a ‘deal-by-deal’ one), and have an investment period of five years or less. If the 100% refund means that GPs do not get any compensation for their additional efforts then we would expect that GPs refunding fully portfolio company fees compensate by charging more in other fees. This is not what we observe. Ex-ante fees and discretionary ex-post fees are unlikely to be substitutes.

< Table 9 >

³² One quarter of the LBO funds in the database do not have a rebate rate mentioned. This can be because they do not refund any transaction and monitoring fees, or because they do not charge any.

Conclusion

In contrast to other fees charged by GPs, monitoring and transaction fees are not well documented. In addition, these fees are contentious because they are charged by GPs to companies whose board is controlled by these same GPs. During the 2008 financial crisis the providers of capital complained about these fees and, as a result, many GPs announced they would refund 100% of these fees going forward. Does this mean that fees appeared right before the crisis and disappeared right after, making our research an anecdotal and historical case study?

First, we find that at best 85% of these fees were rebated on average across GPs in 2011-2014 according to the Preqin Terms and Conditions dataset. In addition, even when a refund of 100% is mentioned, the effective refund can be less because there are restrictions and further complications in those calculations that effectively reduce the rebated amount. Furthermore, we find that management service agreements contain more than just transaction fee and monitoring fee payment schedules. These agreements waive a number of GP fiduciary duties, contain several other fees that can be charged and that we have not included (e.g. break-up and topping fees), and allow GPs to claim wide ranging and discretionary set of expenses. Also, potential kick-back arrangements with suppliers to these companies may present the largest potential for conflicts of interest, and these are not addressed in neither the LPA or the MSA. Hence, the issue of the potential for GPs conflicts of interest and their resolution in practice seems to be a highly relevant question.

In addition, this paper shows that these fees are commonplace and are not a new phenomenon. From as far back as we can measure them, we see a similar amount being charged, irrespective of business cycles. Overall, nearly \$20 billion has been charged across 592 companies, representing 3.6% of all earnings (before interest, tax, debt and amortization) that these companies generated while being under GPs control. Even if these fees were to be 100% refunded to investors going forward, the amounts charged are economically relevant and significantly impact the finances of a large number of corporations. It is important to know why and when companies pay these fees.

Another potential take away from our work is that, perhaps coincidentally, it is not until the SEC started to look into these agreements that practice started to change. This would give credit to the controversial idea that regulatory intervention is necessary even when so-classified ‘sophisticated’ parties contract with one another. Our study may offer a large-scale case study in corporate governance: How is the tension between ownership and control (Jensen and Meckling (1976)) solved in a \$4 trillion market in which participants are classified as ‘sophisticated’, hence exempt from SEC oversight (up until recently)? Monitoring and transaction fees are non-arms’ length fees that PE firms can charge to their portfolio companies while some of the fund managers sit on the company’s board of directors. In a nutshell, in a lightly regulated industry, agents wrote contracts that *could* divert cash away from their principals. Our results indicate that least skilled principals are those most exposed.

In terms of more specific policy implications, our results indicate that the GPs that the SEC has targeted so far are more ‘big names’ than ‘worst offenders’. The fines amounts are also not commensurate with the amount we report here. One could argue that either these fees are accepted and no fine is expected, or these fees are not accepted and the fines should be higher. Moreover, accelerated monitoring fees are the fees that have attracted most regulatory and media attention. But we show that accelerated monitoring fees are only charged if and when companies go public. If monitoring fees are accepted practice then it is difficult to see why a fee charged at the time of the IPO that covers the monitoring of the GPs post IPO would not be accepted. In addition, we do not observe situations in which GPs just siphon all the cash flows out of portfolio companies via transaction or monitoring fees even when companies are in financial distress. More generally, we do not observe any tunneling of the type and nature documented in the literature for other industries and countries.³³ Perhaps, overall, market forces are at work.

Our study relates to a broader literature in industrial organization. The buyout industry seems well suited to study the three-tier principal-supervisor-agent model with supervisor-agent side contracting, originally devised by Tirole (1986). This literature is primarily theoretical and our paper offers a large scale empirical study of a supervisor-agent side contract. Furthermore, these models are mainly developed in a static setting. In this paper, we highlight that the repeated interaction between the supervisor and the principal influences the nature of side contracts. Our empirical analysis may then inform future three-tier hierarchy models in dynamic settings.

Many questions remain open but hopefully, this first paper to study portfolio company fees and management service agreements will stimulate further research in this field.

³³ E.g. Jian and Wong (2010) in China; Baek, Kang, and Lee (2006), and Bae, Kang, and Kim (2002) in South Korea; Bertrand, Mehta, and Mullainathan (2002) and Siegel and Choudhury (2012) in India.

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Appendix: Management Service Agreement of Energy Future Holdings

This letter serves to confirm the retention by Energy Future Holdings Corp. (the “Company”) of Kohlberg Kravis Roberts & Co. L.P. (the “KKR Manager”), TPG Capital, L.P. (the “TPG Manager”), Goldman, Sachs & Co. (the “GS Manager” and together with the KKR Manager and the TPG Manager, the “Managers” and each a “Manager”) to provide management, consulting and financial services to the Company and its divisions, subsidiaries and affiliates (collectively, the “Company Group”), as follows:

1. The Company has retained the Managers, and each Manager hereby agrees to accept such retention, to provide to the Company Group, when and if called upon, certain management, consulting and financial services of the type customarily performed by such Managers. Commencing on the date hereof (the “Effective Date”), the Company agrees to pay the Managers an aggregate annual fee (the “Advisory Fee”) in an amount equal to \$35,000,000 (thirty five million dollars), which amount shall increase by 2% annually (...). The Managers shall split the Advisory Fee so that (i) the KKR Manager shall initially receive a portion of the Advisory Fee equal to \$12,727,500 (twelve million seven hundred twenty seven thousand and five hundred dollars) (ii) the TPG Manager shall initially receive a portion of the Advisory Fee equal to \$12,727,500 (twelve million seven hundred twenty seven thousand and five hundred dollars) and (iii) the Goldman Manager shall initially receive a portion of the Advisory Fee equal to \$9,545,000 (...).

2. To the extent the Company is not permitted to pay the Advisory Fee by reason of any prohibition on such payment pursuant to the terms of any debt financing agreement or instrument of the Company or any of its subsidiaries, the payment by the Company to the Managers, of the Advisory Fee shall be deferred and shall not be due and payable until immediately on the earlier of (i) the first date on which the payment of such deferred Advisory Fee is no longer prohibited under the applicable agreement or instrument and the Company is otherwise able to make such payment, and (ii) total or partial liquidation, dissolution or winding up of the Company.

3. In consideration for structuring services rendered by the Managers and Lehman Brothers Inc. in connection with the acquisition of the outstanding shares of the Company by Parent pursuant to the Agreement and Plan of Merger, dated as of February 25, 2007, by and among Texas Energy Future Holdings Limited Partnership (“Parent”), Texas Energy Future Merger Sub Corp. and the Company (the “Merger Agreement”), which services included, but were not limited to, financial advisory services and capital structure review (the “Initial Services”), the Company agrees to also pay the Managers and Lehman Brothers Inc. a one-time transaction fee in an aggregate amount equal to \$300,000,000 (three hundred million dollars) (the “Merger Fee”), payable immediately upon the Closing (as defined in the Merger Agreement), which Merger Fee shall be apportioned so that (i) the KKR Manager shall receive a portion of the Merger Fee equal to \$106,840,909.09 (one hundred and six million eight hundred and forty thousand nine hundred and nine dollars and nine cents), (ii) the TPG Manager shall receive a portion of the Merger Fee equal to \$106,840,909.09 (one hundred and six million eight hundred and forty thousand nine hundred and nine dollars and nine cents), (iii) the Goldman Manager shall receive a portion of the Merger Fee equal to \$80,130,681.82 (eighty million one hundred and thirty thousand and six hundred eighty one dollars and eighty two cents) and (iv) Lehman Brothers Inc. shall receive a portion of the Merger Fee equal to \$6,187,500.00 (six million one hundred and eighty seven thousand and five hundred dollars).

4. The Company shall, with respect to each proposed transaction, including, without limitation, any proposed acquisition, merger, full or partial recapitalization, structural reorganization (including any divestiture of one or more subsidiaries or operating divisions of any member of the Company Group), reorganization of the shareholdings or other ownership structure of the Company Group, sales or dispositions of assets or equity interests or any other similar transaction (each, a “Transaction”) directly or indirectly involving the members of the Company Group, pay to the Managers an aggregate fee (a “Transaction Fee”) equal to 1% of the Transaction Value, or such lesser amount as the Managers and the Company may agree, any such Transaction Fee to be apportioned so that (i) the KKR Manager shall receive a portion of any Transaction Fee equal to four elevenths of such Transaction Fee (ii) the TPG Manager shall receive a portion of any Transaction Fee equal to four

elevenths of such Transaction Fee and (iii) the Goldman Manager shall receive a portion of any Transaction Fee equal to three elevenths of such Transaction Fee. The Company, on behalf of the members of the Company Group, may agree to pay a Transaction Fee in excess of 1% of the Transaction Value of a Transaction, subject to the consent of the board of directors of the Company. (...)

5. In addition to any fees that may be payable to the Managers under this agreement, the Company shall (...) reimburse the Managers and their affiliates and their respective employees and agents, from time to time upon request, for all reasonable out-of-pocket expenses incurred, including unreimbursed expenses incurred prior to the date hereof, in connection with this retention and/or transactions contemplated by the Merger Agreement, including travel expenses and expenses of any legal, accounting or other professional advisors to the Managers or their affiliates. The Managers may submit monthly expense statements to the Company or any other member of the Company Group (...)

12. This agreement shall continue in effect from year to year unless amended or terminated by mutual consent. In addition, in connection with the consummation of a Change of Control (as defined in the Partnership Agreement) or an IPO (as defined in the Partnership Agreement), the Company may terminate this agreement by delivery of a written notice of termination to the Managers. In the event of such a termination by the Company of this agreement, the Company shall pay in cash to the Managers (i) all unpaid Advisory Fees payable to such Manager hereunder, all unpaid fees payable to such Manager pursuant to Section 4 of this agreement and all expenses due under this agreement to such Manager with respect to periods prior to the termination date, plus (ii) the net present value (using a discount rate equal to the yield as of such termination date on U.S. Treasury securities of like maturity based on the times such payments would have been due) of the Advisory Fees that would have been payable with respect to the period from the termination date through the twelfth anniversary of the Effective Date (...) to be apportioned so that (i) the KKR Manager shall receive a portion of such fees equal to four elevenths of the aggregate amount of such fees (ii) the TPG Manager shall receive a portion of such fees equal to four elevenths of the aggregate amount of such fees and (iii) the Goldman Manager shall receive a portion of such fees equal to three elevenths of the aggregate amount of such fees. (...)

15. Each party hereto waives all right to trial by jury in any action, proceeding or counterclaim (whether based upon contract, tort or otherwise) related to or arising out of our retention pursuant to, or our performance of the services contemplated by this agreement. (...)

17. Except in cases of gross negligence or willful misconduct, none of the Managers (...) shall have any liability of any kind whatsoever to any member of the Company Group for any damages, losses or expenses (including, without limitation, special, punitive, incidental or consequential damages and interest, penalties and fees and disbursements of attorneys, accountants, investment bankers and other professional advisors) ...

If the foregoing sets forth the understanding between us, please so indicate on the enclosed signed copy of this letter in the space provided therefor and return it to us, whereupon this letter shall constitute a binding agreement among us. Very truly yours,

ENERGY FUTURE HOLDINGS CORP.

By: /s/ Jeffrey Liaw

Title: Authorized Signatory

By: Texas Energy Future Capital Holdings LLC, its general partner

By: /s/ Jonathan D. Smidt

By: KKR & Co. L.L.C, its general partner

By: /s/ Marc S. Lipschultz

By: Tarrant Capital, LLC

By: /s/ Clive Bode

By: GOLDMAN, SACHS & CO.

By: /s/ Kenneth A. Pontarelli

By: LEHMAN BROTHERS INC.

By: /s/ Ashvin Rao

Table 1: Portfolio Company Fees Charged

This table shows descriptive statistics for the five categories of portfolio company fees we collected data on: LBO transaction fees, which are charged at LBO inception; add-on transaction fees, which are charged when add-on acquisitions are made; regular monitoring fees, which are charged during the life of the LBO investment; accelerated monitoring fees, which are charged when the LBO investment is exited; and ‘other’ fees, which are charged during the life of the LBO investment and which comprise predominantly refinancing fees. Total Enterprise Value (TEV) is the sum of the Total Enterprise Values of the original LBO and that of any add-on acquisitions all expressed in 2014 US dollars. ‘Total sales’ is the sum of yearly sales figures all expressed in 2014 US dollars, from LBO inception to exit; similarly, ‘Total EBITDA’ is the sum of yearly EBITDA figures all expressed in 2014 US dollars, from LBO inception to exit. Equity ownership by GPs is equal to Equity (equal to TEV minus net debt) times the sum of the ownership of all the GPs participating in the transaction. Statistics in Panels A to D are based on the ‘complete sample’ of 454 LBOs.

Panel A: Fee types and amounts

	LBO transaction	Add-on transactions	Regular monitoring	Accelerated monitoring	Other	All
Fraction of LBOs that are charged this fee	75%	19%	70%	28%	21%	84%
<i>Total amount of this fee charged as a fraction of</i>	-	-	-	-	-	-
Total fees	45%	4%	25%	15%	11%	100%
Total Enterprise Value	0.81%	0.07%	0.44%	0.28%	0.15%	1.75%
Total sales	0.26%	0.02%	0.14%	0.09%	0.05%	0.57%
Total EBITDA	1.66%	0.15%	0.91%	0.57%	0.30%	3.59%
Equity ownership by GPs	2.87%	0.26%	1.56%	0.98%	0.52%	6.19%

Panel B: Fees per exit channel

	No. of obs.	TEV	Fee as a fraction of Total Enterprise Value (TEV)					Total
			LBO transaction	Add-on transactions	Regular monitoring	Accelerated monitoring	Other	
Sale (strategic or financial)	68	154,668	0.82%	0.03%	0.49%	0.00%	0.10%	1.44%
Bankruptcy	133	194,899	0.73%	0.13%	0.40%	0.07%	0.15%	1.48%
Initial Public Offering	253	480,621	0.84%	0.06%	0.44%	0.45%	0.16%	1.95%
Total	454	830,188	0.81%	0.07%	0.44%	0.28%	0.15%	1.75%

Panel C: Fees over time (LBO inception date)

	No. of obs.	TEV	Fees as a fraction of Total Enterprise Value (TEV)					Total
			LBO transaction	Add-on transactions	Regular monitoring	Accelerated monitoring	Other	
1990-1998	163	138,852	0.72%	0.25%	0.41%	0.16%	0.21%	1.74%
1999-2002	98	90,271	0.77%	0.10%	0.46%	0.19%	0.14%	1.65%
2003-2004	80	118,941	1.04%	0.02%	0.39%	0.38%	0.08%	1.91%
2005-2006	66	193,413	0.82%	0.06%	0.46%	0.40%	0.12%	1.86%
2007-2008	28	237,731	0.75%	0.01%	0.46%	0.16%	0.16%	1.53%
2009-2012	19	50,981	0.85%	0.01%	0.47%	0.58%	0.18%	2.09%
Total	454	830,188	0.81%	0.07%	0.44%	0.28%	0.15%	1.75%

Panel D: Companies that paid the highest fees

(millions of 2014 US dollars)	TEV	LBO transaction	Add-on transactions	Regular monitoring	Accelerated monitoring	Other	Total	As a fraction of TEV
Energy Future (fka. TXU)	51,733	349	0	238	0	79	666	1.29%
First Data Corporation	32,195	302	0	168	75	59	604	1.88%
Hospital Corporation of America	39,719	174	3	72	194	89	532	1.34%
Harrah's Entertainment	30,418	223	0	178	0	0	402	1.32%
Freescall Semiconductor	20,230	221	0	92	73	0	385	1.91%
Total	174,295	1,270	3	748	342	228	2,590	1.49%
Other companies	655,893	5,456	599	2,914	1,953	989	11,910	1.82%
Total	830,188	6,725	602	3,662	2,295	1,217	14,500	1.75%

Panel E: Total fee paid

(millions of 2014 US dollars)	No. of obs.	TEV	LBO transaction	Add-on transactions	Regular monitoring	Accelerated monitoring	Other	Total	As a fraction of TEV
Complete Sample	454	830,188	6,725	602	3,662	2,295	1,217	14,500	1.75%
Augmented Sample without imputed fees	592	1,116,411	9,209	707	5,051	2,425	1,491	18,884	1.69%
Augmented Sample with imputed fees	592	1,116,411	9,209	818	5,705	2,425	1,491	19,648	1.76%

Table 2: Descriptive Statistics – Sample of LBOs

This table shows descriptive statistics for the 592 LBOs in our sample; it shows for each variable the number of observations, mean, 25th percentile, 50th percentile (median) and 75th percentile. Monitoring fees are the sum of regular and accelerated monitoring fees; similarly, transaction fees are the sum of LBO and add-on transaction fees (see Table 1). Total Enterprise Value and Total EBITDA are defined in Table 1. Holding period is the number of years between the year of LBO inception and year of LBO exit (year of IPO if partially exited this way). LBO_TEV is the total enterprise value at the time of LBO inception; similarly, LBO_debt is the total debt at the time of LBO inception. LTM stands for Last Twelve Months prior to LBO inception. The ratio of TEV (*debt*) over EBITDA is computed only when LTM EBITDA is positive. Equity ownership by GPs is the fraction of equity owned by all the GPs who sponsor the LBO. ‘Buyout volume (scaled)’, and ‘EBITDA/EV - High Yield spread’ are taken from Haddad, Loualiche, and Plosser (2016); we take the value of these variables in the quarter of investment inception. Sales (*EBITDA*) CAGR is computed as Sales (*EBITDA*) in the year of LBO Exit divided by Sales (*EBITDA*) in the year of LBO inception to the power one over holding period. Volatility of Sales over total asset (*EBITDA over total asset*) is computed using the yearly ratios of Sales over total asset (*EBITDA over total asset*) figures. Top 4 auditor is one if the main GP auditor is a top four accounting firm (source: Preqin). Total EBT is the sum of Earnings Before Taxes figures all expressed in 2014 US dollars, from LBO inception to exit (similar to total corporate taxes paid or credited).

	No. of obs.	Mean	St. Dev.	25 th	Median	75 th
Monitoring fees	592	13.73	29.70	0.23	4.46	12.41
Transaction fees	592	16.94	34.83	1.24	6.15	16.82
Total Enterprise Value (TEV)	592	1,747	4,241	316	638	1,476
Total EBITDA	592	977	2,481	156	366	883
Leverage (*100)	592	62.8	16.5	53.2	64.1	74.0
Holding period	526	4.10	2.74	1.95	3.40	5.97
LBO_TEV to LTM EBITDA	486	9.4	4.6	6.4	8.6	11.4
LBO_Debt to LTM EBITDA	481	6.2	4.6	4.0	5.6	7.4
Bankrupted (1/0)	592	0.14	0.34	0.00	0.00	0.00
IPO exited (1/0)	592	0.47	0.50	0.00	0.00	1.00
Time trend	592	2001	5	1998	2002	2005
Add-ons (1/0)	592	0.37	0.48	0.00	0.00	1.00
Transaction fees (% of TEV)	592	1.1%	0.9%	0.4%	1.0%	1.5%
Monitoring fees (% of TEV)	592	1.1%	1.2%	0.0%	0.7%	1.6%
Transaction fees (% of Total EBITDA)	592	2.4%	2.8%	0.4%	1.6%	3.4%
Monitoring fees (% of Total EBITDA)	592	1.9%	2.3%	0.1%	1.2%	2.6%
Equity ownership by GPs	592	0.86	0.16	0.79	0.91	0.98
Number of GPs	592	1.76	1.05	1.00	1.00	2.00
Credit spread	592	0.84	0.24	0.66	0.81	0.96
Equity risk premium	592	2.26	5.36	-1.60	1.28	6.56
Buyout volume (scaled)	592	20.5	11.5	13.3	18.1	28.1
EBITDA/EV - High Yield spread	592	2.63	1.20	2.11	2.95	3.40
Sales CAGR	547	0.17	0.26	0.03	0.09	0.20
EBITDA CAGR	479	0.16	0.32	0.00	0.09	0.24
Volatility of Sales over Total Asset	530	0.16	0.14	0.06	0.12	0.24
EBITDA volatility	479	0.33	0.27	0.15	0.25	0.45
Top 4 auditor (1/0)	177	0.95	0.22	1.00	1.00	1.00
A GP employee is part of the PC signatures	296	0.39	0.49	0.00	0.00	1.00
Total EBT	576	-175	1,708	-105	-2	65
Total EBT is negative (1/0)	576	0.51	0.50	0.00	1.00	1.00
Total corporate taxes paid or credited	563	0.9	307.4	-4.2	8.5	40.1
EBITDA CAGR prior to LBO	424	0.18	0.30	0.01	0.12	0.27
EBITDA Volatility prior to LBO	448	0.44	0.32	0.18	0.36	0.59
Estimated GP’s return on equity	477	2.63	3.03	0.75	1.65	3.35

Table 3: Deal Characteristics and Portfolio Company Fees

This table shows the results from OLS regressions. Standard errors are clustered by LBO years, and corresponding t-statistics are reported under each coefficient in italics. Each company is classified into one of the Fama-French 48 industries classification based on SIC code. ‘a’, ‘b’, and ‘c’ refer to statistical significance at the 1%, 5%, and 10% level respectively. Variables are as defined in Table 2. Panel A uses (log) Monitoring Fees as the dependent variable, while Panel B uses (log) Transaction Fees as the dependent variable.

Panel A: Regression results, (log) Monitoring Fees as Dependent Variable

EBITDA during investment (log)	0.52 ^a	0.50 ^a	0.50 ^a	0.42 ^a	0.53 ^a	0.44 ^a	0.52 ^a
	<i>7.08</i>	<i>6.29</i>	<i>6.41</i>	<i>4.15</i>	<i>6.51</i>	<i>5.13</i>	<i>6.40</i>
Total Enterprise Value (log)	0.14	0.08	0.07	0.19	0.07	0.39 ^b	0.26
	<i>0.90</i>	<i>0.43</i>	<i>0.40</i>	<i>0.95</i>	<i>0.41</i>	<i>2.30</i>	<i>1.57</i>
Debt raised (log)	0.04	0.06	0.07	0.01	0.05	-0.09	-0.08
	<i>0.39</i>	<i>0.47</i>	<i>0.50</i>	<i>0.10</i>	<i>0.37</i>	<i>-0.73</i>	<i>-0.67</i>
Equity ownership by GPs	0.48	0.48	0.48	0.48	0.42	0.29	0.29
	<i>1.44</i>	<i>1.23</i>	<i>1.24</i>	<i>1.26</i>	<i>1.05</i>	<i>0.72</i>	<i>0.85</i>
Number of GPs	0.13 ^b	0.13 ^b	0.13 ^b	0.14 ^b	0.12 ^b	0.09	0.16 ^a
	<i>2.26</i>	<i>2.22</i>	<i>2.22</i>	<i>2.42</i>	<i>2.25</i>	<i>1.63</i>	<i>3.18</i>
Bankrupted (1/0)	-0.29 ^c	-0.26	-0.26	-0.28	-0.27	-0.35 ^c	-0.37 ^c
	<i>-1.79</i>	<i>-1.54</i>	<i>-1.55</i>	<i>-1.63</i>	<i>-1.64</i>	<i>-1.77</i>	<i>-1.83</i>
IPO exited (1/0)	0.08	0.06	0.06	0.15	0.09	0.12	-0.01
	<i>0.91</i>	<i>0.59</i>	<i>0.59</i>	<i>1.26</i>	<i>0.90</i>	<i>1.06</i>	<i>-0.13</i>
Time trend	0.06 ^a	0.08 ^b	0.08 ^a	0.08 ^a	0.08 ^a	0.06 ^a	0.07 ^a
	<i>2.94</i>	<i>2.43</i>	<i>4.14</i>	<i>3.50</i>	<i>4.57</i>	<i>5.66</i>	<i>5.71</i>
Add-ons (1/0)	0.17 ^c	0.04	0.04	0.04	0.07	0.23 ^b	0.18 ^c
	<i>1.84</i>	<i>0.35</i>	<i>0.34</i>	<i>0.35</i>	<i>0.72</i>	<i>2.31</i>	<i>1.82</i>
Credit spread	0.16	0.27					
	<i>0.56</i>	<i>0.61</i>					
Equity risk premium	0.01	0.02					
	<i>1.04</i>	<i>0.46</i>					
Buyout volume (scaled)		0.00					
		<i>0.10</i>					
Holding period				0.04			
				<i>1.53</i>			
Total EBT is negative (1/0)					0.18		
					<i>1.57</i>		
EBITDA CAGR						0.05	
						<i>0.34</i>	
EBITDA volatility						0.08	
						<i>0.44</i>	
Estimated GPs return on equity							-0.02
							<i>-0.21</i>
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	No	No	Yes	No	No	No	No
Adjusted R-squared	0.41	0.43	0.44	0.43	0.45	0.43	0.44
Number of observations	592	592	592	526	576	479	477

Panel B: Regression results, (log) Transaction Fees as Dependent Variable

EBITDA during investment (log)	0.21 ^a	0.23 ^a	0.23 ^a	0.27 ^a	0.30 ^a	0.19 ^b	0.23 ^a
	2.93	2.79	2.83	3.32	2.67	2.29	2.87
Total Enterprise Value (log)	0.58 ^a	0.59 ^a	0.59 ^a	0.59 ^a	0.61 ^a	0.55 ^b	0.64 ^a
	3.16	2.81	2.87	2.87	2.75	2.33	2.70
Debt raised (log)	0.13	0.13	0.12	0.10	0.08	0.16	0.11
	1.00	0.92	0.87	0.72	0.56	1.00	0.72
Equity ownership by GPs	0.29	0.24	0.26	0.19	0.31	0.33	0.31
	1.30	0.90	0.94	0.69	1.12	1.34	1.52
Number of GPs	0.13 ^a	0.13 ^a	0.13 ^a	0.12 ^b	0.12 ^b	0.12 ^a	0.14 ^a
	3.03	2.70	2.65	2.54	2.52	2.70	3.50
Bankrupted (1/0)	-0.01	0.03	0.02	0.00	0.08	0.04	0.12
	-0.13	0.22	0.16	0.00	0.58	0.33	0.73
IPO exited (1/0)	0.10	0.08	0.06	0.12	0.06	0.15	0.11
	1.17	0.86	0.70	1.31	0.57	1.63	1.14
Time trend	0.02	0.03	0.00	0.00	-0.01	0.02	0.00
	1.05	1.00	-0.16	-0.23	-0.60	1.36	0.32
Add-ons (1/0)	0.40 ^a	0.31 ^b	0.32 ^a	0.35 ^a	0.34 ^a	0.41 ^a	0.41 ^a
	4.15	2.56	2.63	2.84	2.82	3.60	3.98
Credit spread	-0.28	-0.26					
	-0.96	-0.40					
Equity risk premium	0.01	0.00					
	0.66	-0.07					
Buyout volume (scaled)		-0.04					
		-1.15					
Holding period				-0.03			
				-1.02			
Total EBT is negative (1/0)					0.24 ^b		
					2.35		
EBITDA CAGR						-0.06	
						-0.42	
EBITDA volatility						0.13	
						0.76	
Estimated GPs return on equity							0.08
							0.79
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	No	No	Yes	No	No	No	No
Adjusted R-squared	0.52	0.52	0.52	0.54	0.51	0.54	0.56
Number of observations	592	592	592	576	526	479	477

Table 4: Descriptive Statistics of the GP-LBO Sample

This table shows the descriptive statistics of the GP-LBO sample; it shows for each variable the number of observations, mean, 25th percentile, 50th percentile (median) and 75th percentile. The unit of observation is a GP participating in an LBO. As there are 1.76 GPs on average across 592 LBOs, we have 1044 observations. We record the monitoring fee and transaction fee each GP earned in each LBO. For monitoring and transaction fees as a fraction of EBITDA (*TEV*), we use the amount earned by a GP as the numerator; the denominator is total EBITDA (*TEV*) generated during the investment times that GP ownership. We also record the average fees charged by each GP across all of their LBOs in our sample prior to the focal LBO. As there are 375 GPs in our sample, there are 669 observations for fees on previous LBOs. Change in fees is the difference between the (scaled) fee charge on the focal LBO and that charged on the previous LBOs. Data on the amount of capital raised are from Preqin and are expressed in millions of US dollars. Fund performance is also from Preqin and measured by cash multiple (total distributed plus net asset value, all divided by total invested, net of all fees). A fund is ‘out of the carry’ if its IRR is above 8% (as of 2015, net of all fees); note that some funds have a Multiple but no reported IRR hence the decrease in number of observations. Performance volatility is the standard deviation of cash multiples across the funds raised by the same GP; this requires at least two funds in the set. ‘LP skills’ is constructed in two steps. First, for each LP in Preqin LP dataset, we compute the average performance (measured by Cash Multiples) of the private equity funds LPs have invested into (as of the time of the LBO); this variable is ‘LP past performance’. Second, for each GP we compute the average ‘LP past performance’ across all of its LPs and label this ‘LP skills.’ GP lack of reputation is as in Barber and Yasuda (2016): this variable is equal to one if the GP does not have a top quartile fund in its track record, and zero otherwise. GP Market Shares is as in Demiroglu and James (2010): the number of LBOs sponsored by that GP divided by the total number of LBOs observed over the past 36 months (using Capital IQ). GP going public (1/0) is a dummy variable that is one if the GP is either: KKR, Blackstone, or Apollo, and the LBO inception year is between 2003 and 2008. GP ownership is the share of the equity owned by the focal GP. The sum of the ownership of each GP in an LBO is labeled ‘Equity ownership by GPs.’ GP age is computed from the vintage year of the first fund raised by the focal GP. If a GP invests in an LBO with more than one fund, we take the average across funds. Fund age is computed from the fund vintage year. GFC stands for the 2008 Global Financial Crisis. Distance to the GFC is equal to 2008 minus the year of LBO inception. We also record the fraction of the partners working for a given GP at the time of LBO inception that have i) a graduate degree, ii) more than five years past experience in a consulting company, iii) more than five years past experience in an investment bank. Maximum rebate rate for funds of that vintage and size is derived using the Preqin Terms and Conditions dataset; funds are assigned to matching size terciles each vintage year.

	No. of obs.	Mean	St. Dev.	25 th	Median	75 th
Monitoring fees per GP	1044	7.79	16.05	0.00	1.92	8.43
Transaction fees per GP	1044	9.60	18.76	0.00	2.83	11.70
Total EBITDA per GP	1044	490	1,237	52	168	474
Total Enterprise Value per GP	1044	898	2,048	99	306	816
Monitoring fees (% of EBITDA) per GP	1044	1.9%	2.6%	0.0%	0.9%	2.6%
Transaction fees (% of TEV) per GP	1044	1.1%	1.2%	0.0%	1.0%	1.7%
Monitoring fees (% of EBITDA) of GP previous LBOs	669	1.4%	1.4%	0.3%	1.1%	1.9%
Transaction fees (% of TEV) of GP previous LBOs	669	1.3%	1.0%	0.7%	1.2%	1.7%
Change in Monitoring fees (% of EBITDA)	669	0.7%	2.1%	-0.4%	0.0%	1.5%
Change in Transaction fees (% of TEV)	669	0.0%	1.1%	-0.7%	0.0%	0.5%
Amount of capital raised post-LBO by GP	761	6,926	8,304	880	3,250	9,269
Amount of capital raised pre-LBO by GP	761	7,050	9,344	1,000	3,450	8,748
Growth in capital raised pre- to post-LBO by GP	761	0.51	1.33	-0.42	0.14	1.16
Pre-LBO GP performance	681	1.98	0.49	1.66	1.98	2.24
Post-LBO GP performance	659	1.65	0.44	1.37	1.60	1.90
Fund is 'out of the carry'	634	0.22	0.41	0.00	0.00	0.00
Pre-LBO GP performance volatility	518	0.58	0.25	0.48	0.59	0.72
LP skills (average past return)	714	1.55	0.10	1.51	1.55	1.57
GP lacks reputation	681	0.35	0.48	0.00	0.00	1.00
GP Market Shares (*100)	1044	0.32	0.42	0.00	0.18	0.43
GP going public (1/0)	1044	0.05	0.22	0.00	0.00	0.00
GP ownership	1044	0.49	0.33	0.17	0.45	0.80
GP age	832	10.53	8.89	4.00	10.00	16.00
Fund age	700	1.92	1.74	1.00	2.00	3.00
Distance to GFC	1044	6.45	4.59	3.00	6.00	10.00
Monitoring fees (% of EBITDA) * Distance to GFC	1044	0.10	0.21	0.00	0.02	0.12
Transaction fees (% of TEV) * Distance to GFC	1044	0.08	0.12	0.00	0.02	0.11
Amount of capital raised post-GFC by GP	766	6,857	7,847	804	3,500	11,437
Amount of capital raised pre-GFC by GP	766	14,180	13,551	2,500	7,400	28,185
Growth in capital raised pre- to post-GFC by GP	766	-48%	51%	-83%	-63%	-29%
Pre-GFC GP performance	731	1.72	0.27	1.61	1.76	1.87
Pre-GFC GP performance volatility	685	0.57	0.22	0.47	0.62	0.72
Founding partners with a graduate degree (%)	614	0.69	0.39	0.50	1.00	1.00
Founding partners with a consulting background (%)	615	0.10	0.24	0.00	0.00	0.00
Founding partners with an I-banking background (%)	615	0.41	0.36	0.00	0.33	0.67
Maximum rebate rate for funds of that vintage and size	776	0.80	0.17	0.65	0.80	1.00

Table 5: GP Characteristics and Portfolio Company Fees

This table shows results from OLS regressions. Dependent variable is Monitoring Fees Relative to EBITDA per GP. The unit of observation is a GP participating in an LBO. Variables are described in Table 4. ‘other control variables’ are never significant: Bankrupted (1/0), Time trend, and Add-ons (1/0). Industry and Quarter of LBO inception Fixed Effect are always included. Standard errors are clustered by GP; the corresponding t-statistics are reported under each coefficient in italics. ‘a’, ‘b’, and ‘c’ refer to statistical significance at the 1%, 5%, and 10% level respectively.

Total EBITDA per GP (log)	-1.12 ^a	-1.20 ^a	-1.09 ^a	-1.08 ^a	-1.25 ^a	-1.14 ^a	-1.02 ^a
	<i>-6.26</i>	<i>-5.59</i>	<i>-5.96</i>	<i>-4.56</i>	<i>-5.37</i>	<i>-4.07</i>	<i>-5.19</i>
Total Enterprise Value per GP (log)	0.55 ^a	0.49 ^a	0.47 ^a	0.53 ^b	0.44 ^b	0.67 ^a	0.39 ^b
	<i>3.39</i>	<i>2.60</i>	<i>2.75</i>	<i>2.51</i>	<i>2.56</i>	<i>2.64</i>	<i>2.24</i>
IPO exited (1/0)	0.26	0.48 ^b	0.77 ^a	0.48 ^c	0.46 ^c	0.77 ^b	0.38 ^c
	<i>1.42</i>	<i>2.08</i>	<i>3.10</i>	<i>1.74</i>	<i>1.85</i>	<i>2.18</i>	<i>1.73</i>
Total equity ownership by GPs	-2.00 ^a	-2.67 ^a	-2.47 ^a	-2.02 ^c	-2.66 ^b	-2.28	-1.76 ^b
	<i>-2.66</i>	<i>-2.91</i>	<i>-2.88</i>	<i>-1.77</i>	<i>-2.23</i>	<i>-1.61</i>	<i>-2.00</i>
Number of GPs	0.33 ^a	0.44 ^a	0.34 ^a	0.55 ^a	0.42 ^a	0.47 ^b	0.44 ^a
	<i>2.97</i>	<i>3.09</i>	<i>3.00</i>	<i>3.44</i>	<i>3.09</i>	<i>2.32</i>	<i>3.31</i>
GP ownership	2.01 ^a	2.58 ^a	2.12 ^a	1.95 ^a	2.29 ^a	1.52 ^c	2.12 ^a
	<i>3.63</i>	<i>3.67</i>	<i>3.57</i>	<i>2.62</i>	<i>2.87</i>	<i>1.68</i>	<i>3.44</i>
GP Market Shares (*100)	0.24	-0.27	0.01	0.13	0.25	0.09	0.04
	<i>0.70</i>	<i>-0.68</i>	<i>0.03</i>	<i>0.26</i>	<i>0.69</i>	<i>0.18</i>	<i>0.12</i>
GP going public	1.04 ^a						
	<i>3.05</i>						
LP skills (average past return)		-3.32 ^b					
		<i>-2.38</i>					
Monitoring fees (% of EBITDA) of GP previous LBOs			0.75 ^a				
			<i>6.78</i>				
GP lacks reputation				0.19			
				<i>0.47</i>			
GP age				-0.02			
				<i>-0.93</i>			
Amount raised pre LBO by GP (log)				-0.01			
				<i>-0.06</i>			
GP fund age				-0.04			
				<i>-0.55</i>			
Founding partners have a graduate degree (%)					1.00 ^b		
					<i>2.24</i>		
Founding partners have a consulting background (%)					1.79 ^a		
					<i>2.95</i>		
Founding partners have a I-banking background					0.32		
					<i>0.58</i>		
Pre LBO GP performance						-0.74	
						<i>-1.18</i>	
Fund is out of the carry						-0.19	
						<i>-0.51</i>	
Pre LBO GP performance volatility						0.15	
						<i>0.19</i>	
Maximum rebate rate for funds of that vintage and size							-0.38
							<i>-0.55</i>
Other control variables and Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.18	0.22	0.35	0.20	0.24	0.21	0.22
Number of observations	1044	714	669	608	595	451	776

Table 6: Flow-fee sensitivity analysis

This table shows results from OLS regressions. In Panel A, the dependent variable is the increase in capital raised over the ten years prior to the LBO inception year and capital raised over the ten years after the LBO inception year. In Panel B, the dependent variable is the increase in capital raised over 1999-2008 and capital raised over 2009-2015. t-statistics are reported under each coefficient in italics and are based on standard errors clustered by GP. ‘a’, ‘b’, and ‘c’ refer to statistical significance at the 1%, 5%, and 10% level respectively. Variables are as defined in Table 4. GFC stands for the Global Financial Crisis of 2008. Distance to GFC is the number of years from LBO inception year to 2008.

Panel A: Flow-fee sensitivity around date of LBO inception

Monitoring fees (% of EBITDA)	-0.02 <i>-0.87</i>	-0.02 <i>-0.87</i>	-0.02 <i>-0.83</i>
Transaction fees (% of TEV)	-0.03 <i>-0.51</i>	-0.03 <i>-0.51</i>	-0.06 <i>-1.15</i>
Bankrupted (1/0)	-0.05 <i>-0.38</i>	-0.05 <i>-0.38</i>	-0.12 <i>-1.03</i>
IPO exited (1/0)	0.16 <i>1.64</i>	0.16 <i>1.62</i>	0.01 <i>0.13</i>
Add-ons (1/0)	0.05 <i>0.57</i>	0.05 <i>0.55</i>	-0.04 <i>-0.44</i>
Number of GPs invested in the focal LBO	0.07 <i>1.04</i>	0.07 <i>1.07</i>	0.07 <i>1.16</i>
Equity ownership by GPs	0.17 <i>0.52</i>	0.16 <i>0.51</i>	0.05 <i>0.17</i>
GP ownership	-0.15 <i>-0.62</i>	-0.15 <i>-0.61</i>	-0.13 <i>-0.58</i>
GP going public	0.37 <i>1.37</i>	0.39 <i>1.31</i>	0.29 <i>1.19</i>
GP age	-0.02 <i>-1.38</i>	-0.02 <i>-1.37</i>	-0.03 ^a <i>-2.61</i>
Amount raised pre-LBO by GP (log)	-0.22 ^a <i>-3.07</i>	-0.22 ^a <i>-3.07</i>	-0.14 ^b <i>-2.17</i>
Maximum rebate rate for funds of that vintage and size		0.10 <i>0.22</i>	0.08 <i>0.17</i>
Pre-LBO GP performance			0.91 ^a <i>6.02</i>
Industry Fixed Effects	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	Yes	Yes	Yes
Adjusted R-squared	0.35	0.35	0.44
Number of observations	761	761	681

Panel B: Flow-fee sensitivity around the Global Financial Crisis

Monitoring fees (% of EBITDA)	-0.03 ^b	-0.03 ^b	-0.02 ^b	
	-2.24	-2.54	-2.27	
Transaction fees (% of TEV)	-0.13 ^a	-0.12 ^b	-0.08 ^b	
	-2.62	-2.43	-2.14	
Distance to GFC	-0.03	-0.04 ^a	-0.02 ^c	-0.02
	-1.49	-2.70	-1.84	-1.56
Monitoring fees (% of EBITDA) * Distance to GFC	-0.05	0.06	0.08	-0.12
	-0.29	0.28	0.47	-0.44
Transaction fees (% of TEV) * Distance to GFC	1.37 ^b	1.29 ^c	1.03 ^c	0.32
	1.97	1.74	1.89	0.46
Bankrupted (1/0)	0.01	0.00	-0.06	-0.03
	0.08	-0.01	-1.27	-0.61
IPO exited (1/0)	0.11 ^a	0.14 ^a	0.11 ^a	0.09 ^b
	2.64	3.03	2.94	2.28
Add-ons (1/0)	-0.02	-0.03	-0.03	-0.03
	-0.39	-0.74	-0.71	-0.69
Number of GPs invested in the focal LBO	-0.01	0.00	0.00	-0.02
	-0.38	-0.09	-0.06	-0.57
Equity ownership by GPs	0.08	0.11	0.04	0.25
	0.45	0.60	0.23	1.45
GP ownership	0.04	0.05	0.07	0.05
	0.32	0.45	0.62	0.38
GP going public	0.27 ^a	0.31 ^a	0.23 ^b	0.18
	3.09	3.57	2.25	1.56
GP age in 2008	0.01	0.01	0.01	0.01 ^c
	1.44	1.35	0.86	1.80
Amount raised pre-GFC by GP	-0.10 ^b	-0.11 ^b	-0.13 ^a	-0.13 ^a
	-2.44	-2.57	-3.14	-2.83
Maximum rebate rate for funds of that vintage and size		0.33 ^c	0.42 ^b	0.34 ^c
		1.92	2.53	1.95
Pre-GFC GP performance			0.89 ^a	0.91 ^a
			5.48	5.17
Change in Monitoring fees (% of EBITDA)				-0.48
				-0.31
Change in Transaction fees (% of TEV)				-1.59
				-0.35
Industry Fixed Effects	Yes	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R-squared	0.12	0.13	0.37	0.34
Number of observations	766	727	708	583

Table 7: Current GP fundraising situation and portfolio company fees charged

This table shows the recent fundraising activities of those GPs charging the least portfolio companies fees, and compares the post-crisis fundraising to fees charged for those GPs charging the highest portfolio company fees. ‘Out of business’ means that no fund has been raised since 2009; so classified GPs may nonetheless be actively managing their portfolio of companies and may raise a fund in the future. Post-crisis fundraising can also be classified as: Large decrease (between -50% and -99.9%), decrease (between -15% and -50), stable (between -15% and 15%), increase (between 15% and 33%), and large increase (above 33%). GPs in Panel A have a total fee to TEV ratio below 1%, while GPs in Panel B have a total fee to TEV ratio above 2.5%. In Panel A, GPs are sorted by alphabetical order; in Panel B, GPs are anonymized. TEV is in millions of 2014 US dollars. Note that fees are not adjusted for deal size and other characteristics that impact fee levels, and GP fee levels are based on a subset of the investments made by each GP.

Panel A: GPs charging the lowest amount of portfolio company fees

GP name	Post-crisis fundraising	Size and vintage years of flagship funds	Fundraising duration (<i>latest fund</i>)
ABRY Partners	Stable	Fund VIII raised \$1.9b, oversubscribed. Fund VII raised \$1.6b in 2011	6 months
Advent International Corp	Large Increase	Fund VIII raised \$13b in 2016; fund VII raised \$11b in 2011; both oversubscribed. Fund VI raised \$10b in 2008	8 months
Avista Capital	Large Decrease	Fund III raised \$1.4b in 2013, slightly undersubscribed. Fund II raised \$1.8b in 2008	2.5 years
CCMP	Stable	Fund III raised \$3.6b in 2014, oversubscribed. Fund II raised \$3.4b in 2007	2.25 years
Centerbridge	Large Increase	Fund III raised \$6b in 2014, oversubscribed. Fund II raised \$4.4b in 2011	4.5 months
Cerberus Capital Mngt	Decrease	Raising Fund VI, target of \$3.5b. Fund V raised \$2.6b in 2013, undersubscribed. Fund IV raised \$7.5b in 2006	2 years
First Reserve Corp	Large Decrease	Fund XIII raised \$3.4b in 2014, undersubscribed. Fund XII raised \$9b in 2009	2.3 years
Fortress	Decrease	Fund IV raised \$5b in 2015, oversubscribed. Fund III raised \$4.3b in 2012	n/a
Hellman & Friedman	Large Increase	Fund VIII raised \$11b in 2014, their largest ever, oversubscribed. Fund VII raised \$8.9b in 2011.	6 months
Norwest Equity	Increase	Fund X raised \$1.6b in 2015. Fund IX raised \$759m in 2008	n/a
Oaktree Capital Mngt	Stable	Raising Fund IV. Fund III raised \$1b in 2010, oversubscribed. Fund II raised \$1b in 2004	n/a
Odyssey Partners	Large Increase	Fund V raised \$2b in 2014, oversubscribed. Fund IV raised \$1.5b in 2009	5 months
Onex Corporation	Large Increase	Fund IV raised \$5b in 2014, their largest ever, oversubscribed. Fund III raised \$4.7b in 2009	9 months
Summit Partners	Decrease	Fund IX targets \$3b. Fund VIII raised \$2.7b in 2012. Fund VI raised \$3b in 2006	7 months
TA Associates	Increase	Fund XII raised \$5.3b in 2015, oversubscribed. Fund XI raised \$4b in 2010	5 months
Thoma Cressey Equity Prtnrs	Large Increase	Fund XI raised \$3.7b in 2014, oversubscribed. Fund X raised \$1.3b in 2012	4 months
Walnut Investment Prtnrs	Stable	Fund V raised \$150m in 2010, oversubscribed. Fund IV raised \$53m in 2004	8 months
Warburg Pincus	Stable	Fund XII raised \$12b. Fund XI raised \$11b in 2012. Fund X raised \$15b in 2007	6 months

Panel B: GPs charging the highest amount of portfolio company fees compared to TEV

	Post-crisis fundraising	Fees/TEV	Fees/EBITDA	No. of obs.	TEV
GP1	Out of Business	0.077	0.136	2	403
GP2	Large Decrease	0.072	0.141	2	267
GP3	Out of Business	0.066	0.096	1	639
GP4	Stable	0.062	0.145	1	283
GP5	Out of Business	0.058	0.084	2	500
GP6	Stable	0.051	0.137	4	860
GP7	Out of Business	0.047	0.109	1	182
GP8	Decrease	0.042	0.079	1	1271
GP9	Decrease	0.041	0.063	10	2276
GP10	Increase	0.040	0.083	4	581
GP11	Large Decrease	0.039	0.029	3	187
GP12	Decrease	0.038	0.057	3	950
GP13	Decrease	0.037	0.074	13	5510
GP14	Large Decrease	0.035	0.069	4	1206
GP15	Stable	0.034	0.075	1	492
GP16	Large Decrease	0.034	0.045	1	426
GP17	Out of Business	0.033	0.083	4	929
GP18	Out of Business	0.033	0.057	7	2302
GP19	Out of Business	0.032	0.036	6	1597
GP20	Stable	0.030	0.110	1	320
GP21	Large Decrease	0.030	0.086	10	3322
GP22	Out of Business	0.030	0.057	4	1797
GP23	Out of Business	0.029	0.043	16	3813
GP24	Out of Business	0.029	0.058	8	3991
GP25	Out of Business	0.029	0.020	3	926
GP26	Decrease	0.028	0.065	8	13309
GP27	Decrease	0.026	0.032	1	194
GP28	Out of Business	0.026	0.085	10	15202
GP29	Out of Business	0.026	0.045	5	1411

Table 8: GP going public and fees

Panel A shows the amount raised and the performance of the funds raised by six GPs. GPs are anonymized. Average Multiple and IRR are weighted by fund size. Panel B shows the sum of fees charged by a given GP, over a given time period divided by either EBITDA or TEV. EBITDA (*TEV*) is adjusted by GP equity ownership. Three GPs filed an S1 form: Apollo (4/8/2008), Blackstone (3/22/2007) and KKR (7/3/2007). Three similarly large GPs remained private in 2007 are Bain capital, Carlyle and TPG.

Panel A: Change in capital flows and performance for the largest six GPs

	Vintage years: 1980- 2002			Vintage years: 2003 - 2008		
	Total raised	Average Multiple	Average IRR	Total raised	Average Multiple	Average IRR
<i>GPs filing an S1 form</i>						
GP 1	11.97	2.10	23.08	30.03	1.78	17.06
GP 2	14.29	2.05	22.57	37.90	1.52	10.08
GP 3	19.53	2.45	15.61	44.94	1.55	10.73
GPs 1, 2 and 3	45.79	2.23	19.73	112.87	1.60	12.20
<i>Similar GPs not filing an S1 form</i>						
GP 4	10.96	2.26	19.37	29.55	1.47	8.89
GP 5	11.02	2.49	20.33	31.66	1.54	12.12
GP 6	15.12	2.26	20.73	45.45	1.45	9.88
GPs 4, 5 and 6	37.10	2.33	20.21	106.66	1.48	10.27

Panel B: Fee policy pre- and post-2003

	Fees charged 1980-2002 (LBOs)			Fees charged from 2003 (LBOs)			% change in fees charged	
	Monitoring (% of EBITDA)	Transaction (% of TEV)	No. of obs.	Monitoring (% of EBITDA)	Transaction (% of TEV)	No. of obs.	Monitoring (% of EBITDA)	Transaction (% of TEV)
<i>GPs filing an S1 form</i>								
GP1	1.05%	0.78%	9	1.94%	0.99%	23	85%	26%
GP2	1.38%	1.37%	10	2.31%	1.60%	21	68%	16%
GP3	0.77%	0.56%	14	1.44%	0.84%	18	87%	51%
GPs 1, 2 and 3	1.02%	0.82%	33	1.83%	1.08%	62	80%	32%
<i>Similar GPs not filing an S1 form</i>								
GP4	4.05%	2.06%	17	1.34%	1.03%	24	-67%	-50%
GP5	1.35%	1.05%	8	1.22%	0.52%	18	-9%	-50%
GP6	1.37%	0.95%	13	1.56%	0.61%	18	14%	-36%
GPs 4, 5 and 6	2.14%	1.39%	38	1.38%	0.74%	60	-35%	-47%
<i>Rest of GPs</i>	1.20%	0.84%	484	1.62%	0.74%	367	35%	-12%

Table 9: Rebate Policy Across Funds and Over Time

Panel A of this table shows the average rebate of transaction and monitoring fees per vintage year. Statistics are shown per fund vintage years and separately for the sub-sample of funds charging less (more) than 2% per annum of management fees (which is the average), for the sub-sample of funds that are smaller (larger) than \$500 million (the average fund size), and for all funds. Panel B shows the fraction of funds rebating a given amount. Panel C shows the regression results when the ‘Rebate rate’ is used as the dependent variable. Data source: Preqin Terms and Conditions database 2014 (Buyout funds only, Europe and US based funds). One quarter of the LBO funds have a missing entry and are not included: they are likely not to refund any transaction and monitoring fees but we cannot be certain.

Panel A: Rebate policy per vintage year

Vintage years	No. of funds	Base management fee		Fund size (\$ million)		All
		≤ 2% p.a.	> 2% p.a.	≤ 500	> 500	
2000-2003	20	82.66	82.50	87.50	79.32	82.63
2004	14	77.64	-	77.14	78.14	77.64
2005	23	76.19	35.00	70.00	76.67	72.61
2006	31	70.86	75.00	67.38	82.22	71.13
2007	39	70.34	57.50	65.57	73.06	69.03
2008	32	81.67	50.00	78.08	84.41	79.69
2009	29	76.54	76.67	67.86	84.67	76.55
2010	57	76.74	67.27	72.81	73.16	74.91
2011	51	85.25	86.67	85.59	85.00	85.33
2012	45	85.00	83.33	84.04	88.06	84.89
2013	35	84.58	100.00	81.39	96.21	86.34
2014	13	84.17	100.00	82.86	88.33	85.38
Total	389	79.40	73.33	76.28	82.37	78.79

Panel B: Fraction of funds rebating a given amount

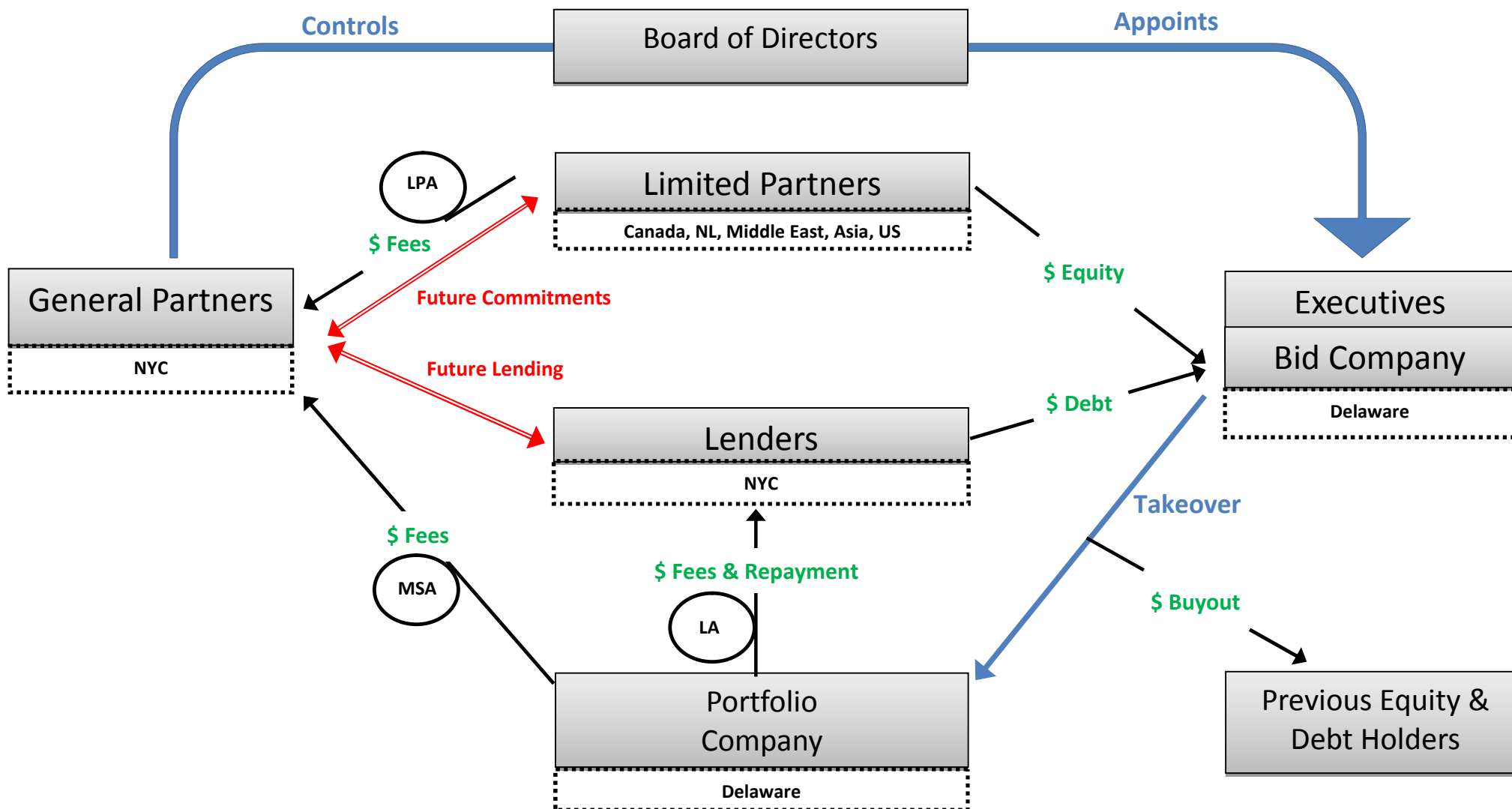
Rebated rate	Base management fee		Fund size (\$ million)		All
	< 2% p.a.	> 2% p.a.	< 500	> 500	
50%	0.23	0.26	0.27	0.18	0.23
80%	0.28	0.18	0.26	0.30	0.27
100%	0.40	0.44	0.36	0.45	0.40
Other	0.09	0.13	0.10	0.08	0.10

Panel C: Regression analysis; dependent variable: Rebate Rate

Aggressive waterfall (deal-by-deal)	-6.76 ^a				-5.32 ^b	
	-2.67				-2.15	
Aggressive base management fees (>2%)		-6.56 ^b			-5.94 ^b	
		-2.04			-2.05	
Aggressive carry (>20%)			-16.27 ^b		-15.30 ^a	
			-2.26		-2.60	
Aggressive Investment period (>5)				-7.33 ^a	-7.10 ^a	
				-2.76	-2.72	
Aggressive hurdle (<8%)					-11.65 ^c	-13.89 ^c
					-1.74	-1.91
Fund size	4.71 ^a	2.85 ^b	4.17 ^a	4.54 ^a	4.22 ^a	4.54 ^a
	4.44	2.19	4.07	4.25	4.11	3.37
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	16	15	15	16	15	21
Number of observations	285	285	285	285	285	285

Figure 1: The private equity model

Simplified version of the private equity model. It abstracts from i) the offshore fund which intermediates between LPs and bid companies, ii) the separation between the investment advisory firm and the general partner vehicle (which together form the transaction sponsor), and iii) intermediary offshore holding companies that fully own the bid company. Contracts are shown in circles. Double arrows show repeated interactions between two parties. Places in the dotted lines show the typical geographical location of the headquarters. LPA, MSA and LA refer to Limited Partnership Agreement, Management Services Agreement, and Lending Agreement respectively.



Appendix Table 1: Income streams of the ‘Big-4’

This table shows the income stream for the private equity segment of the four private equity firms that are publicly listed. These firms are also considered to be the four largest private equity firms according to PEI magazine 2014 ranking.

	2008	2009	2010	2011	2012	2013	2014	2015	Total
Apollo									
Fund management fees	245	261	259	263	277	285	315	296	2,201
Monitoring and transaction fees Gross	330	148	163	156	276	n/a	n/a	n/a	1,073
Fee offsets	-209	-99	-101	-98	-154	n/a	n/a	n/a	-661
Monitoring and transaction fees Net	121	49	60	58	122	78	58	-7	539
Carried interest	-845	311	1,322	-449	1,668	2,517	232	26	4,782
All fees	-479	621	1,641	-128	2,066	2,880	605	315	7,521
Blackstone									
Fund management fees	269	271	263	332	349	368	416	503	2,771
Monitoring and transaction fees Net	52	86	72	133	100	97	135	36	711
Carried interest	-430	338	309	71	258	728	1,977	757	4,008
All fees	-110	695	644	536	707	1,193	2,528	1,296	7,489
Carlyle									
Fund management fees	523	536	538	511	496	472	565	577	4,218
Monitoring fees net	14	16	15	31	18	23	18	14	149
Transaction fees net	20	12	22	35	19	21	51	8	188
Monitoring and transaction fees Net	34	28	36	66	37	44	69	22	336
Carried interest	-688	495	1,264	854	770	1,874	1,354	686	6,609
All fees	-132	1,059	1,838	1,431	1,303	2,389	1,988	1,285	11,161
KKR									
Fund management fees	396	415	396	430	424	460	453	466	3,440
Monitoring fees gross	97	158	87	164	117	120	135	265	1,143
Transaction fees gross	23	58	96	167	97	150	215	145	951
Fee offsets	-13	-74	-53	-145	-97	-137	-199	-195	-913
Monitoring and transaction fees Net	108	142	130	186	116	134	151	214	1,181
Carried interest	-1,160	746	605	139	684	794	1,229	1201	4,238
All fees	-656	1,303	1,131	755	1,223	1,387	1,381	1,882	8,406