

Private Equity Portfolio Company Fees

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Comments welcome

Abstract

A less known fact about private equity is that General Partners (GPs) enter ‘service agreements’ specifying fee payments by companies whose boards they control. We describe these contracts and find that related fee payments sum up to \$20 billion evenly distributed over twenty years, representing over 6% of the equity invested by GPs on behalf of their investors. Fees do not vary according to business cycles, company characteristics, or GP performance. Fees vary significantly across GPs and are persistent within GPs. Once these fees became public information GPs charging the *least* to companies raised significantly *more* capital. GPs that went public distinctively increased their fees. We discuss how results can be explained by optimal contracting versus tunneling theories.

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“It is not clear exactly what these transaction fees are paying for, since GPs should already be receiving (...) management fees. We think of these transaction fees as just being one way that [GPs] can earn revenue (...) It is difficult to find reliable information about the frequency and size of these fees (...) As with transaction fees, we think of monitoring fees as just another way for funds to earn a revenue stream.” Metrick and Yasuda (2010)

When private equity firms sponsor a takeover, they may charge fees to the target company while some of the firm’s partners sit on the company’s board of directors. In the wake of the global financial crisis, such potential for conflicts of interest became a public policy focus. Google Trend shows no searches prior to November 2009 for private equity portfolio company fees and a steady flow of related searches thereafter. On July 21st 2015, thirteen state and city treasurers wrote to the SEC to ask for private equity firms to reveal all of the fees that 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.¹ 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 fee issues.

Relatively little is known about private equity portfolio company fees: What are the different types of fees, what do they pay for, how much is charged? How common are the accelerated monitoring fees the SEC seems to focus on, are these fees a new phenomenon? Do fees vary by GP, business cycles, or company type? Can these fees be rationalized? Using a comprehensive hand collected dataset, this paper aims to fill this gap.

Most private equity funds are organized as limited partnerships, with private equity firms (e.g. Blackstone, KKR) 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’ inceptions and define the expected payments by LPs to GPs: a fixed management fee, a carried interest which is paid if a certain return is achieved (like a call option), and the fraction of portfolio company fees that is rebated to the LPs. Gompers and Lerner (1999) and Metrick and Yasuda (2010) show that these fees are overall similar across GPs and over time.

When GPs find a suitable investment, they call the necessary amount of capital from LPs, arrange the acquisition, and join the board of directors, which in turn appoints the Executive team. We find that in most cases a Management Services Agreement (MSA) is signed between GPs and the Executive team acting on behalf of the company. MSAs list various portfolio company fees and the services they are associated with. Our analysis of these MSAs shows that these fees are ex-post discretionary compensation items for GPs.

¹ Wall Street Journal, August 6th 2015: <http://www.wsj.com/articles/dutch-pension-fund-demands-full-fee-disclosure-from-private-equity-firms-1438850122>

As most limited partnerships last for 10 to 14 years, LPAs are necessarily incomplete contracts. It is not only costly to write the numerous contingencies that can arise over such a long period of time but also difficult to even foresee these contingencies. For example, five years after the LPA is signed a financial crisis may trigger a hike in the cost of executing or monitoring LBOs. The earliest foundations of transaction cost economics (Williamson (1971)) argue 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)). The solution to the dynamic incomplete contracting problem in the private equity industry may be similar to that of the procurement literature. We need a 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. A similar justification is that MSAs smooth out GPs' compensation and therefore reduce GPs required risk premium, hence enables LPs to reduce the average compensation of GPs (see, e.g. Itoh (1993) and Holstrom and Milgrom (1990)).

This type of argument implies that portfolio company fees should be predominantly company- and time-specific, not GP specific. For example, companies that are riskier or more difficult to monitor should command higher fees. Fees should increase with the level of environmental complexity (e.g. times of higher credit spreads, lower credit supply).

There are at least three other theoretical arguments that may support the view that MSAs are part of an optimal contracting device. 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 and when 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'; MSAs can reset their incentives then. 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, MSAs can counteract GP's incentive to invest in bad projects when they are getting close to their investment period deadline (Axelson, Strömberg, and Weisbach (2009)).

These three arguments are GP-specific. They point at GPs' past and current performance as the key drivers of fee levels. The company's financial distress, and fund age at the time of LBO inception, may also play a role. There are also predictions common to all of these optimal contracting views. GP fund flows should be insensitive to the amount of portfolio company fees. In addition, if these contracts are optimal then GPs should retain a meaningful portion of the portfolio company fees they charge. Otherwise, investors lose the benefits of using MSAs in the first place.

Alternatively, these fees may be a wealth transfer. As with any wealth transfer, a stakeholder must lose out and we identify three possible victims. First, the transfer may be at the expense of the tax authorities. 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 (see Appendix A for a detailed example).

Second, the transfer could target LP supervisors: e.g. regulators, the board of trustees. LPs report to their principals the fees that they pay to the GPs. By charging fees directly to portfolio companies instead of charging management fees to LPs, expense ratios reported by LPs are lower.

Third, these fees may be the result of tunneling as defined by Johnson et al. (2000): “transfer of resources out of a company to its controlling shareholder [GPs here] (...) via self-dealing transactions.” In that case, cash is simply withdrawn from LP investments without their consent. This is similar to the tunneling situations explored in the literature but there is an important difference here: the GP-LP interaction is a repeated game. If GPs divert cash away from LPs, returns are lower, hence future funds are smaller, and future fees are lower (see Chung et al. (2012)). In addition, LPs may notice this and drive tunneling GPs out of business.

The first two arguments imply that LPs should allocate more capital to GPs that charge more portfolio company fees (all else equal). Under the tax tunneling view, we also expect GPs to i) charge more at times where more taxes are being paid (i.e. in good times), in companies with larger tax bills; ii) rebate at least 65% of the portfolio company fees because the maximum marginal corporate tax rate is 35%. Under the LP supervisor tunneling view, we expect that i) funds charge higher transaction fees in their first two years; and ii) GPs whose LPs have more remote supervisors (e.g. fund of funds) charge more. The third argument implies that i) the rebate is less than 100%, ii) that LPs invest less in funds that charge more portfolio company fees, iii) that GPs under pressure to increase short term revenues charge more, and iv) that fees are a policy of the GP (i.e. persistent at the GP level).

We show that it is possible, albeit at great cost, to obtain comprehensive information about the portfolio company fees charged between 1995 and 2014: 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, sum up to \$1.1 trillion.

The sum of the transaction fees in our sample is \$10 billion, representing 0.9% of aggregate TEV. Monitoring fees sum to a similar amount. Other fees (e.g. refinancing fees) add up to \$2.4 billion, but are not included in the rest of the analysis. In total, fees add up to nearly \$20 billion, and are basically equally distributed over time.

Monitoring fees are most correlated with the total EBITDA generated during the life of the investment, whereas transaction fees are primarily related to TEV. LBO characteristics such as industry, earnings volatility, leverage, and GP ownership explain little of the overall variation in

fees. Similarly, business and LBO-industry cycles have little explanatory power. Fees are not higher at times when it is more difficult to execute or monitor LBO investments (e.g. times of high credit spreads, low leverage; see Axelson et al. (2013)). In fact, adding time fixed effects increases R-squared values by less than 10 percent. This evidence is not consistent with either the first ‘optimality argument’ or 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.

Next, we document strong evidence of fee persistence at the GP level. When we control for GP past fee policy, we find that the R-squared value doubles. Fees seem to be a GP choice.

In 2006-2008, the decision by three GPs to sell part of their own company offers another opportunity to disentangle the tunnelling view from the contracting view. The IPO literature shows that the cash flow performance of firms going public tends to peak around the time of their IPO, presumably because IPO firms pump up their performance in order to fetch higher valuations at the offering. If portfolio company fees are manipulable by GPs, we would expect them to exhibit this pattern.

Although the decision by GPs to sell part of their company is endogenous, we note that there are three similarly large GPs, with a similar track record who remained private. 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. If portfolio company fees are manipulable by GPs, then monitoring fees should increase more. If the decision to sell is due to market timing, we would not expect one particular fee to increase more than the other.

We find that the three selling GPs nearly doubled their monitoring fees while the other three comparable GPs decreased these fees by 38% (the rest of the GPs increased them by 22%). For transaction fees the difference is less pronounced: the three selling GPs increased them by 13% (versus a 36% decrease for the three other large GPs and a 22% decrease for the rest of the GPs). Subsequent performance is similar for the selling GPs and the other GPs, indicating that there was no obvious improvement in monitoring.

As noted above, it is arguably not until the aftermath of the financial crisis that portfolio company fees started to be public information. How did LPs react once the news was out and information about these fees piled up?

We study the capital flow-fee sensitivity and find that the amount of capital raised post-crisis (2009 to 2015) is strongly related to the amount of portfolio company fees charged by a GP. We control for the amount of capital raised pre crisis and for past performance; they are both positively related to the amount of capital raised post crisis. This means that high-fee GPs were ‘penalized’ both via the performance channel (fees mechanically reduced performance) and via the effect of these fees per se.

If we simply rank GPs by the amount of fees they charge, we see that about half of those charging the most have not raised a new fund since the crisis. Most of the others have raised much smaller funds. In contrast, the GPs that charge the least have all raised a new fund, in a relatively short time, and most of them have raised more money post-crisis than pre-crisis. Furthermore, consistent with the news arriving post-crisis, the flow-fee sensitivity is null around the time when the LBO occurred (pre crisis).

This evidence of LPs rewarding low-fee GPs contradicts all of the hypotheses except for the third tunneling hypothesis. An alternative view would have to be behavioral. For example, LPs are overreacting to information about these fees, they do not understand them and do not realize that these fees are optimal and in their best interests. It is also possible that it is the LP principals who got excessively worried about these fees post-crisis because of the ‘headline risk’ and LPs reacted as a result of their principals attitude rather than because the practice was not optimal.

Overall, the body of evidence is difficult to reconcile with the ‘optimal’ view or the ‘tax’ view. 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 fees tend to be outliers, small, young, and raise significantly less capital going forward. The only caveat is that it took two decades for market forces to manifest themselves here. Perhaps the regulatory intervention has been decisive in helping out investors who have not generally benefitted from SEC protection. We note however that the magnitudes of the SEC fines so far are not commensurate with the amount of fees we document here and that GPs that have been fined are not those charging the most. Also, expenses charged by GPs to portfolio companies may present the largest potential for conflicts of interest. We do not have data to analyze expenses or potential kick-back arrangements but it would be a natural follow up study.

The paper continues as follows: Section 1 describes the content of MSAs and presents the related literature. Section 2 presents 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 different 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 Service Agreements: Content and related literature

We begin by offering some institutional details about the working of private equity funds. Next, we describe in detail the content of Management Service Agreements (MSAs). Finally, we review the relevant literature, and formulate some hypotheses as to what the main motivation behind MSAs might be and what the empirical implications are.

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 2013, LBO firms have raised as much as \$1 trillion of capital. Carlyle, KKR, Blackstone and Apollo – the four largest LBO firms – alone have raised \$100 billion dollars.²

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: 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 of Gompers and Lerner (1999) and Metrick and Yasuda (2010) among others.

LPs commit capital to GPs and GPs 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 employees (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 on average that 33% of the seats on the board are taken by LBO sponsors after the LBO). The board of directors, in turn, appoints the executive team. A Management Services Agreement (MSA) is then signed between GPs and the Executive team. Figure 1 illustrates this time line.

Importantly, 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 8% per annum net of all fees is reached). In addition, LPAs mention that portfolio company fees may be charged and specify what fraction of each type of portfolio company fees will be refunded. The refund, also called rebate or offset, is done by reducing the management fee due in a given quarter. If there is more money to be refunded than management fees due then the

² Amounts raised by largest 300 firms in funds that ‘closed’ between 2009 and 2013.

[https://www.privateequityinternational.com/uploadedFiles/Private_Equity_International/PEI/Non-Pagebuilder/Aliased/News_And_Analysis/2014/May/Magazine/PEI%20300%20May%202014\(2\).pdf](https://www.privateequityinternational.com/uploadedFiles/Private_Equity_International/PEI/Non-Pagebuilder/Aliased/News_And_Analysis/2014/May/Magazine/PEI%20300%20May%202014(2).pdf)

excess may be rolled over to the next quarter (the roll-over rules, the list of exceptions, the methodology etc. are all 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 an-ex post contract for LPs and in practice, LPs are not shown past MSAs.³ 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 2 provides a detailed illustration of the situation at the time of the investment. LPs are in the bottom right corner and provide cash (and additional cash is borrowed). LPs capital is channeled via a fund, usually sitting on the Cayman Islands, and which becomes the controlling shareholder of a company incorporated in the US. This transaction is organized, a.k.a. ‘sponsored’, by GPs. GPs control both the board of the Cayman island fund and the board of the corporation. GPs then de facto appoint the senior executive team, which is the same team with which they contract the services agreements. In fact, GPs sometimes sign the MSA on behalf of both parties.

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. On the other hand, executives have a significant equity ownership and own the most junior equity tranche. Fees represent an ex-post dilution of the executives’ equity ownership in the company and can significantly reduce compensation. Each dollar of fee can cost 15 cents to executives. Executives are thus expected to negotiate the MSA as part of their overall compensation package.⁴

Figure 2 does not include the lenders. At the inception of each LBO a lender signs a ‘lending agreement’ with the executives. As ex post cash transfers can be detrimental to lenders, lenders are expected to monitor MSAs and the fees and expenses claimed by GPs. Lenders may raise the cost of financing for GPs that charge excessive 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 refill their credit line: the LP-GP interaction is a ‘repeated game.’ Deceived LPs do not commit to the next fund pushing that GP out of business. This disciplining force is valid as long as a GP has a positive probability to raise a follow-on fund.

³ Past MSAs are not included in documents sent to current or prospective LPs. Anecdotally prominent LPs told us that they could not obtain MSAs from GPs before 2008. From 2011, most GPs tell their LPs how much transaction and monitoring fees they charge. Practitioners are surprised when we tell them MSAs are in SEC filings.

⁴ Anecdotally, a serial private equity 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 he could afford to do this because he was doing well and, as a result, the GP would not fire him.

1.2 Description of Management Services Agreements

Appendix B shows key parts of the Management Services Agreements (MSAs) signed for the first, third and fifth largest LBO to date, and for three mid-market LBOs. Two of the mid-market MSAs are for Simmons, a company that was held by two different GPs successively. One of these two GPs is TH Lee and the third mid-market LBO is one sponsored by TH Lee (so we can observe two contracts for the same company written by two different GPs, and two contracts of the same GP written for two different companies). We describe the first MSA in detail and then discuss how subsequent MSAs diverge from this first MSA.

Energy Future (Appendix B1)

This agreement was entered on October 10 2007. The 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 annual fee increases by 2% per year. The 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 and not how, a priori, the workload is shared.

Section 2 states that *if* the company is prohibited from paying the fees due (e.g. because of a lender agreement) fees will be paid when it is no longer prohibited to pay them. It is usually the case that fees are 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.’ It is mentioned that Lehman Brothers worked in connection with the acquisition and receives \$6 million of the \$300 million. This fee to Lehman Brothers is not recorded in our dataset because it is not charged by a GP.

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

Section 5 authorizes GPs to invoice the company for ‘reasonable’ expenses in connection with their task. Traditionally, the management fees paid by LPs to the LBO fund are seen as covering the ‘fixed’ cost of GPs to acquire, monitor and dispose of businesses on behalf of LPs; e.g. GPs need to hire professionals (e.g. lawyers), travel to visit the companies etc. The MSA shifts these expenses to the company (the agent) and, unlike monitoring and transaction fees, LPs do not obtain any rebate of these expenses from the management fees. In addition, the MSA seems to allow GPs to invoice their internal cost of providing their services. For example, a GP may perform

a refinancing transaction. The department within the GP that executes this transaction might be considered an ‘other professional advisor’ in which case GPs receive both their share of the 1% of the transaction value (as of section 4) and be refunded for the service rendered. Expenses claimed by GPs are not disclosed and not covered in this study.

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 (since they have majority). 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 it has not performed any services or if the services were not satisfactory. Those 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.

Hospital Corporation of America (Appendix B2)

This agreement was entered on November 17, 2006. The TEV is \$33 billion; it is the third largest LBO transaction (as of 2014). Section 1 details the type of services covered by the agreement. The work to be provided is what the GP ‘deems reasonably necessary or appropriate; provided, *however*, that no minimum number of hours is required to be devoted.’ A particularity of this MSA is that the founding family receives \$29 million of transaction fees while it is unclear how the founding family can contribute to the sort of legal, accounting or advisory work listed in Section 1 of the MSA. The monitoring fee here increases each year as a function of the growth in adjusted EBITDA and is therefore performance dependent (rather than workload dependent). Again, all fees are split according to the respective ownership of equity by the GPs.

Of interest is the fact that the list of refundable expenses includes the use of privately owned airplanes, a.k.a. private jets, “as determined by the party seeking reimbursement.” Unlike in the previously shown MSA, the person signing for HCA is *not* an employee of any of the GPs.

Harrah’s Entertainment (Appendix B3)

This agreement was entered on January 28, 2008. The TEV is \$27 billion; it is the fifth largest LBO transaction to date. The MSA is similar to the two MSAs reviewed above. Section 2a seems more explicit about allowing GPs’ internal costs to be invoiced to the company; hence transaction fees come on top of the work conducted in connection to this transaction. Section 2b is an example of the monitoring fee being the greater of a fixed amount and a fraction of EBITDA. In this case, monitoring fees has a call option component.

Less common is the fact that the rate charged for ‘subsequent fees’ is not specified in section 2c. Instead the amount to be charged is kept somewhat flexible: it is what would be charged by ‘internationally-recognized investment banks.’ The termination fee is rather complex here and perhaps subjective.⁵ What seems particularly difficult is the calculation of the future post-acquisition fees: it is difficult at the time of contract termination to know how many and how much post acquisition fees would have been charged going forward. In addition, one needs to have a projection of future yearly EBITDAs to complete the calculation.

The sections relating to fiduciary duties (5b and 6) are more extensive than in the previous two MSAs. These sections list several 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’). All people signing this MSA are GP employees: Anthony Civale works for Apollo.

West Corporation (Appendix B4)

The agreement was entered on October 24, 2006. The TEV is \$3.3 billion, and it is similar to the others. The expense section mentions first-class air fare or charter (i.e. private jets). It lists expenses that can be claimed by the GPs and lists 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 occurred in March 2013, seven years after acquisition, meaning that the private equity firms received 14 years of monitoring fees on that investment.

Simmons 1998 and 2003 (Appendix B5 and B6)

Fenway acquired Simmons in October 1998. What is referred to as ‘management fees’ here are what we label ‘monitoring fees’. Here, the monitoring fee is pegged to net sales and charged for the standard ten years, but with no termination fees. This MSA is different to that signed by TH Lee in 2003. TH Lee acquires 80% of the shares from Fenway, Fenway keeps 10% and management has the remaining 10%. TH Lee is the sole beneficiary of the MSA and this MSA has the same specificities as that of West Corporation: e.g. the termination fee computed as the present value of seven years of monitoring fees. This is a first indication that GP characteristics may be more important than company characteristics.

⁵ “...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.”

Summary of MSA content

Management Service Agreements (MSAs) set out the terms and conditions by which a company agrees to pay service fees and out-of-pocket expenses to an equity sponsor (GPs) in connection with a Leveraged Buy-Out (LBO). MSAs are overall similar across GPs. GPs receive fees for broadly defined services. Those services are the usual ones provided by GPs and for which LPs pay management fees. No minimum amount of work is required. In about 10% of the cases monitoring fees are related to performance (growth in EBITDA, or sales; see Appendix Table 1). Half of the MSAs last for ten years and when a termination rule is specified it usually states that the present value of fees until contract expiration are to be paid (Appendix Table 1). In addition, executives agree not to sue GPs in case of conflicting interests or unsatisfactory provision of services. GPs can terminate the MSA unilaterally and receive the fees that would have been paid absent termination. In club deals, fees are split in proportion of equity ownership and not on how workload is split.

Executives also refund GPs the business expenses that those GPs deem reasonable to provide those broadly defined services. There lies a subtlety: some GPs may consider their ‘internal costs’ to provide services as an expense that is refunded as such; transaction and monitoring fee is then a pure mark-up.

MSAs state that most GP initiatives can trigger an additional fee payment (‘post acquisition fees’); it is left to the discretion of GPs.⁶ 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.⁷

While these somewhat qualitative observations are beyond the scope of this paper, we note some puzzling content in the MSAs. In the case of HCA, a selling family obtains a significant transaction fee while not having the internal capacities to carry the type of investment banking services that the transaction fees are supposed to cover. Similarly, co-investing LPs often get a significant share of transaction fees while having less internal investment banking capacities than GPs (if at all). In some secondary buyouts, the selling GP obtains a significant transaction fee, while most of the due diligence is a priori carried by the buying GP. Finally, if any actual work done internally can be expensed as such then by definition, fees would not compensate for actual work.

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 amounts are discretionary.

⁶ 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. [Source](#).

⁷http://www.nytimes.com/2015/06/14/business/retirement/when-private-equity-firms-give-retirees-the-short-end.html?_r=2.

1.3. Related literature and hypotheses

Metrick and Yasuda (2010) were the first to provide some magnitudes for transaction fees and monitoring fees using an ad hoc survey. They do not express a particular judgement regarding these fees, and state that these fees 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 other words, these fees are just a component of total compensation just like the other fees. LPs should not penalize or reward GPs for charging these fees; what matters is the total fee charged, not the amount of one of the fee components.

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 explanations that we attempt to bring to the data but we would not claim to be comprehensive.

We begin with mechanism 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, and have been widely studied in the literature. In our context, this 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 because of the possible existence of such side contracts between the supervisor and the agent. He introduced the possibility of collusion via implicit or explicit side contracting between the agent and the supervisor in three-tier hierarchies. The ensuing literature studies the conditions under which collusion may be beneficial, and when it is not, how to minimize the negative effects. MSAs fit the definition of side-contracts in that literature but that literature does not study a dynamic principal-supervisor-agent model in 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. Mechanism designs developed so far may thus not apply to our context but some of the theoretical arguments studied may still be robust in our setting. An example 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, this lowers 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 it 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 adaptation costs to be paid to the agent. MSAs could be viewed as such adaptation tools. The empirical implications seem similar to those of the three tier literature. 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 is being covered. Hence fees should be higher for riskier companies, and at times of higher LBO environment complexity (e.g. times of credit spreads, lower credit supply etc.).

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 promised 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 gate keeper to prevent ‘GPs going for broke.’ They do not allow for the presence of MSAs in their model. But MSAs could significantly counteract GPs 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 may be that ex post fees such as 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.

A 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 return 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 these 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, hence profit goes up. 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 if and when GPs are successful. An empirical implication is that fees are positively and primarily related to past and current performance of GPs.

A related argument is that ex post fees can reset the incentives of GPs whose carried interest is ‘out-of-the-money’. Similarly, if a company is in financial distress, it is well known that equity-holders, hence management, has little incentive to work hard in these situations 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).⁸ An empirical implication may be that monitoring fees are higher when companies are in financial distress, and when funds internal rate of returns are below 8%.

Common predictions of these optimal contracting views is that GP fund flows should be insensitive to the amount of portfolio company fees; and that GPs should retain some of the portfolio company fees they charge with the fraction retained not exhibiting a particular time trend.

Alternatively, these fees may be a wealth transfer. As with any wealth transfer, a stakeholder must lose out and we identify three possible victims: tax authorities, LP supervisors, and LPs.

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.’⁹

In general, tax arbitrage could be a motivation for charging both transaction and monitoring fees. Under this view, the GP receives a special dividend at the time of investment inception (‘transaction fee’), and when certain events occur (e.g. ‘fee for recapitalization’, ‘fee for asset disposal’, ‘termination fee’) in addition to 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 (see Appendix A). LPs benefit as long as the

⁸ On the other hand, when the company is close to bankruptcy the supervisor could hold up principals (and debtholders) by taking all the cash from the agent as a fee; especially in situations where the supervisor may go out of business (and thus not raise a new fund, and not negotiate a new LPA).

⁹ Polsky (2014) bases his conclusions on the analysis of a typical MSA. He focuses on monitoring fees and commentaries in the press by practitioners generally approved of his view.

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 perform better, and attract higher subsequent capital flows from LPs. In addition, more fees should be charged when companies 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%.

Fooling LP supervisors

As pointed out by Lakonishok, Shleifer, and Vishny (1992), LPs have a wide range of supervisors; it may include regulators, board of trustees, government. By charging fees directly to portfolio companies and reducing LP management fees, GPs affect the metric by which LP supervisors judge LP staff. LP staff usually work for a private equity department and compete with other departments for capital allocations (and mandate restrictions) by LP supervisors. Because past performance is a noisy signal of future net of fees performance, LP supervisors look at other metrics such as expense ratios. Arguably, private equity is the asset class with the highest fees and LPs may want this fact to be minimized. Perhaps coincidentally, it is quite rare for LPs to include carried interest in their reported expense ratios.

LPs have for the most part simply reported management fees paid. In practice, however, LPs pay less than the amount of management fees *due* because of i) management fee waivers, whereby management fees are waived and get added to carried interest instead; and ii) management fee offsets for portfolio company fees. The more portfolio company fees are charged, the lower the management fee called and the lower the reported expense ratio of LPs. In one of the first media articles covering portfolio company fees, in 2011, this rationale was provided by an anonymous LP to *The Economist* who was wondering why LPs would accept portfolio company fees and in particular what the point of a portfolio company fee was if the rebate was 100%.¹⁰

¹⁰ Portfolio company fees may also affect Internal Rates of Returns (IRR), another metric by which LPs are judged. When LPs invest for the first time in private equity (or after they increase their allocation sharply), they pay large management fees in comparison to capital invested because management fees are based on capital committed. This negatively impacts IRR in a mechanical way and this phenomenon is called the J-curve effect. If funds charge large transaction fees for their first transactions, management fees decrease substantially and the J-curve effect diminishes. However, if additional capital is called to pay for transaction fees, the impact on IRR is the same unless Net Asset Value would be set to be equal to all the capital invested including fees.

If LPs are aware of this, or ask for this, they should ask for high transaction fees at the beginning of the fund's life, and lower transaction fees for investments occurring later in the fund's life as well as lower monitoring fees (because monitoring fees occur later on in the life of the fund).

Tunneling LPs

MSAs might fit the description of *tunneling* as defined by Johnson et al. (2000) as the “transfer of resources out of a company to its controlling shareholder (who is typically also a top manager)” and most specifically their definition of tunneling via “self-dealing transactions.” In other words, portfolio company fees could simply be cash siphoned out of companies by GPs at the expense of LPs. GPs rebate some of this cash to LPs but keep part of it, the latter is what is being siphoned out.

Importantly, although the LP-GP relationship had been outside of the regulator prerogatives up until 2012, there are disciplining forces in addition to the standard protections offered by US common law code. Specifically, it is in the interest of the executive team and the lenders in each LBO transaction to limit cash transfers from the company to the GP; they should act as a gatekeeper when the MSA is negotiated, very much in line with the model of Axelson, Strömberg, and Weisbach (2009).

In addition, the GP-LP interaction is a repeated game. LPs might later on notice those cash transfers directly (or indirectly, via lower than expected returns) and then reduce their capital allocations to GPs whose fees are deemed excessive.

The amount being tunneled would mainly depend on GPs' marginal intertemporal rate of substitution, i.e. GPs' patience. Patient GPs are less likely to tunnel as they value future fee streams more. In other words, GPs under pressure to increase short term revenues should charge more. Other implications are that i) LPs should penalize GPs that are tunneling most, ii) fees are a policy of the GP and should therefore be persistent at the GP level, and iii) the effective rebate rate ought to be less than 100%. Moreover, if information about these fees became gradually public then effective rebate rate may slowly increase over time.

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 unlike in publicly listed companies. Axelson, Strömberg, and Weisbach (2009) show that the financial structure of LBO funds minimizes agency conflicts between GPs and LPs. Barber and Yasuda (2013), and Brown, Gredil, and Kaplan (2015) study whether GPs can fool LPs by manipulating net asset values when fundraising. Arcot et al. (2014) 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, the principal could contract with the agent for a monetary reward if the agent agrees only to MSAs approved by the principal.

Other related studies include that of GPs monitoring activities (e.g. Bernstein, Giroud, and Townsend (2013), 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. The Securities and Exchange Commission (SEC) regulations require companies with registered securities to file reports which are then made publicly available electronically (since 1995).¹¹ 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 have publicly traded debt.

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. We collect a list of public to private LBO transactions using Capital IQ. The rest of our sample also comes from Capital IQ: we download all the transactions classified as US LBOs with a TEV of \$10 million or more, exclude sponsor firms with less than five LBOs listed in Capital IQ, and select the sub-set of companies for which post-LBO EBITDA is available.¹²

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.¹³

SEC filers need to declare i) ‘material contracts’ such as credit agreements and MSAs, ii) previous fiscal year ‘related party transaction’ which describes any *non-arm’s length* fee agreement (if worth more than \$120,000), and iii) financial information for the preceding three years. These filings then provide annual information on portfolio company fees. The large amount of SEC filings, changes in company name, and the overall complexity of LBO transactions make the process tedious and non-trivial. We collected this information ourselves and spent an average of three hours per company. To illustrate the collection process, Appendix C shows in detail how we collected and codified the fees for the largest LBO in our sample.

Filings do not always cover all years from inception to exit of the LBO. If an investment is held for more than three years, has no publicly traded debt and went IPO, then we do not have information on the initial transaction fee. We exclude 112 LBOs for which we do not know whether a transaction fee has been paid or not and end up with 592 LBOs.

¹¹ Based on the definitions set forth in Regulation S-K of the Securities and Exchange Commission.

¹² 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 (2012) also assembled datasets of LBO sponsored companies that filed with the SEC, we also use their data to cross-check ours.

¹³ We rescue 40 observations by using the ‘total asset’ value post LBO as reported by Capital IQ. When regressing TEV on total asset (in the sample for which both variables are available) we observe a unit slope and an R-square of 70%. This substitution thus appears reasonable.

We could however have a transaction fee reported in an S4 form for a public to private transaction, then no filings up until the IPO. In this case the beginning of the fee time-series is missing. A company may also buy back its publicly traded debt in which case the end of the time-series is missing. We count 140 LBOs with ‘incomplete’ fee information.

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, and also referred to as ‘termination fees.’

There are a number of additional portfolio company fees. Appendix D shows an exhibit taken from a private equity workshop at CalPERS. Next to transaction and monitoring fees, they list director fees which compensate for serving as directors on the board of portfolio companies. As they are a priori arms’ length related party transactions they are usually not recorded in SEC filings. Next are commitment fees, financial advisory fees, and capital market fees. These fees include the post-acquisition fees charged in connection with recapitalization, structural reorganization, dispositions of assets etc. which we saw when describing the MSAs in the previous section. The subset of these fees that fall under non-arms’ length related party transactions are reported and we record them as ‘other fees.’ The last type of fees mentioned is ‘break-up and topping fees.’ From practitioner conversations these fees seem material but we do not see them in SEC filings. It is unclear how these fees are charged effectively. It may be that they are rolled up in the transaction fees of successful acquisitions and when this is the case we account for them indirectly when recording the transaction fees paid.

< Table 1 >

The first line of Table 1 – Panel A shows that these different fees are not charged with the same frequency. 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 the end of 2015). We observe that no termination fees are charged for as many as 72% of the LBOs. Interestingly, the majority of MSAs have a provision for termination fees; hence GPs decide to 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).

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).¹⁴

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.¹⁵ Specifically, fees represent 3.6% of the lifetime 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 (2012) 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 these 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; two or three years is quite common. 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 will continue to do afterwards. When the exit is not an IPO, monitoring stops and termination fees are hardly ever charged then.

¹⁴ For transaction fees, the correlations are, respectively, 90%, 68%, 57%, and 81%. For monitoring fees, the correlations are, respectively, 64%, 71%, 65%, and 58% (non-tabulated). This confirms the tight link between transaction fees and TEV (rather than equity deployed), and that monitoring fees is more loosely related to company size, but EBITDA is what is most closely related.

¹⁵ 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.

Another interesting aspect is that 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. This is nonetheless a point of tension. There have been law suits where lenders have accused GPs of charging excessive fees prior to companies going bankrupt. An example is Buffet's restaurant law suit which was settled for \$28 million.

Table 1 – Panel C shows the fees broken down per year of LBO inception. Our sample is well distributed over time. 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, the 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 high 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.

The important take away from this panel is that although portfolio companies 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. Otherwise, we would be adding up 1990s dollars with 2014 dollars. This has an impact on the overall amount. If we do not inflation adjust and simply add up numbers, relative fees are the same but absolute amounts are lower by about 15%. The simple sum of the fees for TXU for example is \$572 million.

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 significant downward bias in fee estimates and the procedure is detailed in Appendix E.

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

Whether \$20 billion for \$1.1 trillion of TEV is a large amount or not can be debated. To put this number in context, we make a back of the envelop calculation using CalPERS data. CalPERS is one of the largest investors in private equity and invests mainly in US-focused LBO funds. By the same token, this exercise further illustrates some of the mechanics we introduced 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.¹⁶ 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; a summary is shown in appendix Table 3. We observe the average effective rebate rate for two GPs. Apollo collected \$1.28 billion (between 2007

¹⁶ We obtain a similar estimate if we match funds in our database to the funds CalPERS invested in, using the amount charged by each fund, and the amount CalPERS invest in each fund.

and 2012) and rebated 61% of this amount. KKR collected \$2.4 billion (from 2007 to 2014) and rebated 39% of this amount. 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 .¹⁷

We do not know the management fees *due* on these funds by CalPERS. We assume that it is 2% of capital committed for 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. The current accounting system used by CalPERS (and 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.¹⁸

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, 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.

Fees charged by the 'big-4' GPs

Fees reported by the four largest GPs may offer some further economic magnitudes and data cross checks (Appendix Table 3). Notice that GPs report fees differently compared to LPs. GPs report management fees *due* whereas LPs report management fees *paid* (i.e. after rebate). These four GPs earned collectively at least \$15 billion of carried interest, \$10.8 billion of management fees, and \$3.1 billion of *net* monitoring and transaction fees. If Blackstone and Carlyle would also rebate about 50% of the fees, the total amount of portfolio company fees charged to companies by these four GPs alone would be \$6 billion over the last 8 years. Coincidentally, the sum of the fees charged by these four GPs in our sample is \$5.8 billion.

Portfolio company fees are economically meaningful. We also see that Carlyle collects less portfolio company fees than the other three GPs; and that transaction fees are slightly higher than monitoring fees, consistent with our sample descriptive statistics.

¹⁷ Note that we do not have the rebate figures for Carlyle and Blackstone. Note also that the average maximum rebate rates reported in the Preqin Terms and Condition database is 80%. We do not know what rebate CalPERS effectively received but using 50% is also consistent with the difference between the management fees we estimated were due by CalPERS and those they reported to have paid.

¹⁸ 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 actions/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 reported overall 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 LBO boom. 37% of the LBOs have made add-on acquisitions. Importantly, we have 14% of the LBOs in our sample that file for bankruptcy. Although our sample is probably tilted towards better performing LBOs due to the 47% of IPO-exits, we have many LBOs that did not perform well. 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 (2013).

Relative to TEV, monitoring fees are more widely distributed than transaction fees, but relative to EBITDA, it is the opposite. About half of the LBOs are club deals (i.e. have more than one sponsoring GP). On average there are 1.76 GPs sponsoring an LBO and together they own 86% of the equity. The rest is typically owned (mostly) by management. The amount of fees collected per dollar of equity brought 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 the increase in 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 tax credit cumulated as tax paid overall. This indicates that the benefits of further lowering corporate taxes using portfolio company fees is perhaps more limited than at first sight.

< Table 2 >

Regression analysis

We analyze the determinants of the amount of fees charged to a given company. We first set as the dependent variable the natural logarithm of monitoring fees. The independent variables are taken from the set of LBO characteristics shown in Table 2. We begin by analyzing the variables that are available for all of the LBOs. The results are shown in Table 3 – Panel A.

We note a strong relationship between monitoring fees and contemporaneous EBITDA. In contrast, TEV is weakly correlated with monitoring fees. Next we note only weak relations between fees and ownership, and even between fees and exit routes. This indicates that the over-representation of IPOs in our sample is unlikely to bias our results.

As discussed above, a potential explanation for these fees is that they compensate for effort, and effort should be higher in more difficult LBOs. As it is difficult to measure ‘investment difficulty’ we use several proxies. Axelson et al. (2013) show that a key driver of LBO volume and pricing is credit spread. When credit spreads are narrower, executing LBOs may be easier, but we do not find a correlation between fees and credit spreads.¹⁹ To further study the importance of business and credit cycles, we use a more draconian approach and introduce quarter of investment inception fixed effects. The increase in R-squared is modest (less than 10%).

Investment difficulty may vary across companies instead. To measure investment difficulty cross-sectionally we use the following ratios: Debt to TEV (leverage), Debt to EBITDA, and TEV to EBITDA. The idea is that investments that are more leveraged (relative to both TEV and EBITDA) or cheaper (low TEV to EBITDA) are more like traditional LBOs. In addition, we use both the mean and volatility of the realized growth in EBITDA, plus a dummy variable that is equal to one when Earnings Before Tax (EBT) is negative (and zero otherwise). None of these proxies are statistically significant. We find similar results if we use sales or EBT instead of EBITDA, or subsamples, e.g. only liquidated investments, only LBOs with complete fee series (non-tabulated).

Note that the tax benefits of monitoring fees are lesser when EBT is negative. Yet, monitoring fees are slightly higher and not lower when EBT is negative. Also, we control for industry fixed effects throughout and the impact of these fixed effects on R-squared values is negligible (non-tabulated).

Table 3 – Panel B shows the same specifications with (natural logarithm of) transaction fees as the dependent variable. In this case, TEV is strongly correlated with the amount charged. The statistical significance is high and the coefficient is near unity (for readability reasons we express TEV and EBITDA in hundred of millions). The coefficient of transaction fees to TEV is about 0.75

¹⁹ Another important variable in the LBO literature is the spread between the ratio of EBITDA to Enterprise Value and high yield rate. Kaplan and Strömberg (2009) propose this variable to measure the expected return on an LBO as this is roughly a measure of return on asset minus cost of financing by high yield debt. This variable is not significant. We also look at VIX and it is not significant either.

which shows that larger LBOs pay relatively less transaction fees. Interestingly transaction fees are related to the number of GPs involved: they increase with the number of GPs.

Transaction fees increase with leverage, and total EBITDA generated by the investment (ex-post). Transaction fees decrease with the relative price paid at acquisition. The ratio of TEV to EBITDA is low for higher value companies (rather than growth companies). Higher valued companies also tend to have higher leverage and generate more EBITDA (once we control for TEV). These higher valued companies are those with a relatively higher transaction fee.

LBOs with higher transaction fees are also more likely to have a negative EBT and thus not to pay any corporate taxes going forward. The rest of the characteristics are not related to transaction fees: exit route, time trend etc.

Perhaps surprisingly, credit spreads are not significant. Quarter fixed effects have an even lower impact on R-squared with transaction fees than they have with monitoring fees. Transaction fees are therefore insensitive to business and credit cycles.

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 overall similar and reported in Appendix Table 4. Of notice, R-squared values drop to at most 17% for monitoring fees (to EBITDA) and are even lower for transaction fees (to TEV), peaking at 7%. When scaling by equity, leverage is strongly significantly positively related to fees charged. In more highly levered investments, Limited Partners pay significantly more fees per dollar of investment (all else equal).

To study reverse causality, we also study whether fees are related to EBITDA growth and volatility pre-LBO, instead of looking at post LBO figures. The number of observations is lower but results are similar: there is no relation (non-tabulated).

We conclude that neither LBO characteristics nor time-series variables are significantly related to fee levels. Transaction fees are higher for ‘value’ companies, whose LBOs may require less effort rather than more effort, if anything, compared to more growth-like LBOs. Overall, proxies for LBO riskiness, difficulty to monitor, tax liabilities etc. 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. If monitoring fees would compensate for efforts they would be lower in boom times, vary across deals as a function of the industry, variability of cash flows, financial distress etc. We do not observe this. It is similar for transaction fees. Yet, there is plenty of variation in fees across LBOs. What explains this variation then? We now investigate whether it is GP dependent.

< Table 3 >

< Table 4 >

4. Fees and GP characteristics

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 usually split according to ownership as discussed above but monitoring fees may not be. 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 of monitoring fees to EBITDA and transaction fees to TEV at the GP level. Whenever a fee is distributed according to ownership across GPs the GP-LBO fee ratio is the same as the LBO fee ratio analyzed previously. In addition, we construct the average relative fees 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 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 about 7,328 private equity funds. Following Harris, Jenkinson, and Kaplan (2013) 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 multiples in our sample are 1.98 pre-LBO and 1.65 post-LBO, similar to statistics reported in the literature. Using the same dataset, we construct the Barber and Yasuda (2014) binary measure of GP reputation: in 35% of our observations the GP lacks reputation, i.e. does not have a top quartile fund in its track record.

We also measure the amount raised by each GP post financial crisis (vintage years 2009 to 2015) and the amount 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%. Pre-crisis funds have on average a cash on cash fund multiple of 1.7 (value weighted).

We also purchased 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 and thus report an average ‘maximum’ rebate rate.

In addition, there are many exceptions and rules for the calculation of the rebate. The headline figure is therefore an upper bound by definition. To reflect this situation we label the variable ‘maximum rebate rate for funds of that vintage and size.’ Finally, 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 the each fund-LBO pair in our sample. On average the maximum fee rebate is 80%, while the interquartile range is 65% to 100%.²⁰

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%).

GPs selling their own company and change in fee policy

As typical in this literature, we lack natural experiments to study causal behavior. Yet, there is an interesting and potentially relevant event we can study here: in 2007-2008, three GPs filed an S1 form. The S1 form is an SEC filing used by companies planning on offering shares to the public to register their securities with the SEC as the "registration statement by the Securities Act of 1933." Blackstone filed an S1 on June 21st 2007, KKR filed an S1 on July 3rd 2007, and Apollo filed an S1 form on April 8th 2008. In these forms GPs detail their fee income, including portfolio company fees. Note that some preliminary S1 forms were filled: e.g. KKR filed a preliminary S1 in 2006. We do not know when GPs took the decision to sell part of their own company. Since some preliminary forms were filed in 2006 and the last three fiscal years of revenues are what are usually discussed in those forms, we compare fees charged by these GPs up until 2002 with those they charged from 2003 onwards. We use 2004 and 2005 instead of 2003 as break years in robustness tests.

The three similarly large GPs that decided to remain private were Bain capital, Carlyle and TPG. Comments in the press at the time indicate that it was down to differing philosophies.²¹

A large literature, starting with DeGeorge and Zeckhauser (1993), argues and shows empirically that the incentives of managers to report increased performance in the three years prior

²⁰ 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. This being a small sub-sample, we do not use it.

²¹ A private equity firm core model is based on sharp managerial incentives based on concentrated ownership; a publicly traded GP is seen as an oxymoron by some observers and practitioners.

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 experienced an unusual surge in fees decided to go public.²²

In our setup, we can go some way to separate out this timing story from a manipulation story. An additional and important aspect of this selling event 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 LBO fees. The latter fees are non-recurring while the monitoring fees are future contractual obligations which will be paid. Under the manipulation story, unlike under the timing story, monitoring fees should increase more than transaction fees.²³

Table 5 – Panel A shows fees for LBOs executed prior to 2002 and for LBOs executed in 2003 or later (pooled observations per GP). In the first sub time 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.

Post-2003, we observe that monitoring fees (relative to EBITDA) increase by a staggering 81% for the three GPs that sell part of their own company. Their transaction fees also increase but more modestly: by 13%. In contrast, the other three large GPs decreased both fees by more than one third. The rest of the GPs increased monitoring fees relative to EBITDA by 25%, monitoring fees relative to TEV increase by only 4%, and transaction fees relative to TEV decrease by 22%.²⁴ These simple statistics are in line with the prediction of the ‘GP patience hypothesis’: GPs that are under pressure to generate high income now rather than later charge more of these discretionary and non-transparent source of fees.

An alternative view is that when GPs prepare to sell their company, they suddenly start to monitor more and change their monitoring fees accordingly, but not their transaction fees. 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 5 – Panel B shows that we do not see much difference in performance between the set of GPs; except GP 1 which seems to outperform. If the GPs that went public increased monitoring, it does not seem to trigger an increase in performance.

²² This hypothesis also requires that the market does not have perfect foresight regarding these fees because it would otherwise understand and price the trade-off between more fees now and more fees later. But we note that these fees were essentially unknown back then. There is no public information regarding these fees, they cannot be benchmarked against that of other GPs, whether they went up over time or not etc.

²³ One may also argue that in the manipulation story, most of the increase in fee dollars should come from an increase in the fee percentage while in the timing story it should come from an increase in volume. Empirically, we do not observe a significantly different increase in volume for the three selling GPs and the rest of the GPs (non-tabulated).

²⁴ GP4 had large monitoring fees pre 2002 because of several quick flips: company was held for about one year then brought public and a termination fee was charged. Hence compared to one year of EBITDA these fees were large.

Another argument is that only these three GPs had, for some reasons, the opportunity to increase their monitoring fees and this is what triggered their decision to sell their own company. A counter argument would be that the amount of fees to be charged is at the discretion of the GP, as seen above, hence any GP should be able to do so. Perhaps only the largest or the GPs with the best track record could do it. Table 5 – Panel B shows that track records and amounts raised prior to the selling decision is similar between the two sets of GPs.

We acknowledge that the experiment is imperfect. Yet, i) the significance of the economic magnitudes; ii) the difference between monitoring and transaction fee changes; and iii) the fact that relative performance before and after the decision to go public seems to be the same, may indicate that GP patience plays a role in the determination of portfolio company fees.

< Table 5 >

Regression analysis: Fees charged by a given GP

While the experiment above indicates that portfolio company fees may be driven by GPs' patience, we need to verify that this result holds in a multiple regression setting. In addition, since most GPs are privately held we still need to explain most of the observed variation in fees.

In Table 6, the dependent variable is the fee charged by a given GP in a given LBO. Panel A shows the results for monitoring fees relative to EBITDA while Panel B shows the results for transaction fees relative to TEV.

The first specification includes all the characteristics that are available for all the observations. The two GP characteristics introduced here are statistically significant: GPs with a higher equity ownership and GPs that are going public both charge relatively more. But the R-squared value is still only 17% at that point.

In the second specification, we introduce past fees charged by the GP, and the effect is very large. The coefficient is around one, the *t*-statistics near 10 and the R-squared doubles (37%). Importantly, in these regressions, we cluster standard errors at the GP level which decreases *t*-statistics compared to those obtained with other clustering choices.

The finding of a strong persistence in fee policy implies that GP characteristics drive differences in fees charged. The rest of the specifications show that some GP characteristics are significant indeed.

GPs that lack reputation (in the Barber-Yasuda sense; i.e. do not have a top quartile fund in their track record) charge significantly more. GPs with higher reputation, or GPs with the longest track record of renegotiations with LPs (proxied by GP age), charge less and not more fees. The 'optimal compensation adjustment' view would probably predict the opposite: LPs should agree to more ex-post discretionary compensation for the GP as trust has been built between LP and GP, and as past performance is better; rather than the other way around.

Next, we introduce founders' backgrounds since Acharya et al. (2013) show that they have a material influence on the GP strategies.²⁵ Having a graduate degree and a consulting background is positively correlated with monitoring fees. Finally, we introduce more GP characteristics. None of them are statistically significant. In particular, fund age is not related to fees. This means that none of the 'optimal contracting' views that relied on specific GP characteristics (past and current performance, fund age, etc.) find empirical support. We also used a dummy variable that is one if the fund IRR is above 8% (and zero otherwise) to proxy for 'GP is in the carry'. This is not significant either (non tabulated).

Panel B shows the results for transaction fees. There, persistence in fees is slightly weaker and the R-squared is lower. GP characteristics explain less of the variations. Similarly, GPs going public is associated with higher transaction fees but not always significantly so.

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, industry fixed effects are all not jointly significant. In contrast GP fixed effects are highly statistically significant. Another result we have not tabulated yet is that GPs with more fund-of-funds as LPs charge more fees. We used another Preqin dataset for this: it contains about 30,000 unique pairs of LP investments into a given private equity fund. LPs are mainly pension funds, foundations and endowments, and fund of funds. This finding could be supporting the view that portfolio company fees aim at fooling LP supervisors because fund of fund supervisors are basically retail and small institutional investors.

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.

Table 7 shows the results of a multiple regression analysis. 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 (2011)). None of the other explanatory variables are significant. In particular, fees do not matter.

Evidence in Table 7 is consistent with LPs not minding these fees. But it is not consistent with an LP-GP collusion to save on taxes. This evidence may also not consistent with LPs tunneling unless LPs found it too difficult to observe, measure and benchmark these fees. If these fees are non-observable then LPs are not able to react to fee magnitudes.

Arguably, portfolio company fees became a point of tension and growing concern only after the financial crisis. Some press coverage and practitioner reports (e.g. from Preqin) mentioned that

²⁵ Reduction in sample size forces us to drop the variable called GP going public as it is zero for most observations.

since fundraising suddenly halted, GPs could increase the amount of fees they charge to portfolio companies to compensate. LP associations (ILPA) started to federate and 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. Appendix Figure 3 shows the Google trend time-series for ‘management service agreement.’ It is exactly zero all the way to November 2009, peaks then, and stays well ‘googled’ thereafter. We conjecture that from 2009 onwards, LPs and their own principals become widely aware of these fees. We can then study how fundraising post-crisis is impacted by past fee policy.

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

As just mentioned, it is not until the aftermath of the financial crisis that portfolio company fees started to be mentioned in the media, that LPs started to coordinate actions related to these fees, and that the SEC started related investigations. The 2008 financial crisis may then offer an opportunity to measure LPs reaction to portfolio company fees becoming public information.

The results in Table 8 are different from 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 later part of the sample are not as penalized on the fundraising front as GPs in the opposite situation (remember that transaction fees are not as persistent as monitoring fees). We also note that the rebate rate to LPs now matters too: 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 in Table 8 (as in Table 7) 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. In 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.

Although we found 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.

These results may feel 'black box' at this point. In addition, it is perhaps instructive to provide some economic magnitudes. Panel A – Table 9 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 is at 0.8% and 1.4%, while the next GPs (that are not on this list) are respectively at 1%, 1%, 1.1%, 1.2% (of TEV) and at 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 although 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 total fee ratio 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, but it is obviously noisy.

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. GPs on this list tend to be small, and have low reputation.

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 6 > < Table 7 >

< Table 8 > < Table 9 >

Regression analysis: The rebate rate and other fee dimensions

We study the rebate policy of GPs using the 2014 Terms and Condition database of Preqin. As explained above, these rebate rates are upper bounds. We do not know the effective rebate rates except for KKR, who seems to be the only GP to report the effective rebate rate every year since 2007.

Table 10 – Panel A shows that the average maximum rebate rate is about 80% and has gone up significantly in 2011 and stayed from then on at about 85%. Table 10 – 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.²⁶ It is somewhat puzzling that only three rates are used, but most puzzling is probably the high frequency of the 100% rate and, to a lesser extent, the 50% rate.

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 first two wealth transfer views: tunneling of LP principals and tunneling of tax authorities. However, these rebate rates are upper bounds. There are sometimes many exceptions which 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 10 – 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 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.²⁷ 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 of other fees. This is not what we observe.²⁸ Ex-ante fees and discretionary ex-post fees are unlikely to be substitutes.

< Table 10 >

²⁶ 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.

²⁷ We also find some cyclicalities in the rebate rate, with less rebating when LBO funds are raising more money (e.g. in 2007), and refund rate tends to be higher for larger funds.

²⁸ Remember that 100% refunds are not really 100% refunds. If the management fees are smaller than the portfolio company fees, which is most likely towards the end of the fund’s life.

Conclusion

From 2008 to 2014, the largest four private equity fund managers (called GPs) earned collectively \$16.5 billion of carried interest – a performance-related fee, \$10.8 billion of management fees – a fixed fee, and \$2.5 billion of fees labeled ‘net monitoring and transaction fees.’ In contrast to the former two sources of fees, 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, at best 85% of these fees were rebated on average across GPs in 2011-2014. 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 which 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, and allow GPs to claim wide ranging and somewhat discretionary set of expenses. There are also several other fees that can be charged and that we have not included (e.g. break-up and topping fees). Even a perfect 100% refund of all portfolio company fees, if ever in place, would not solve all of the possible agency conflicts that service agreements seem to create (rather than solve).

In addition, this paper shows that these fees are commonplace and are not a new phenomenon. In fact 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) these companies generated while being under GPs control. Even if these fees were to be 100% refunded to investors going forward, we note that 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. If we cannot provide a definite answer to this difficult question, we may contribute to it.

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. Therefore, it is either the case that these fees are accepted and no fine is expected, or that these fees are not accepted and the fines would be expected to be much higher.

Moreover, accelerated monitoring fees are the fees that have attracted most regulatory and media attention. But we show that accelerated monitoring fees are basically only charged by company going public and at the time of the IPO. If monitoring fees are accepted practice then it is difficult to see why a fee charged at the time of the IPO which 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.²⁹ Perhaps, overall, market forces are at work.

There are many open questions still and perhaps we raise more questions than we bring answers. Hopefully, this first paper to study portfolio company fees and management service agreements will catalyze further research in this field.

Our study may also be of interest to a broader literature in industrial organization. The buyout industry seems well suited to study ‘hierarchical agency’ issues; in particular, the three-tier principal-supervisor-agent model with supervisor-agent side contracting, originally devised by Tirole (1986). The extensive literature following Tirole’s contribution is primarily theoretical and our paper offers a first large scale empirical study of a supervisor-agent side contract. Furthermore, the theoretical models are mainly developed in a static setting. In this paper, we show that in private equity, the repeated interaction between the supervisor and the principal influences the nature of the side contracts. Our empirical analysis may then inform future three tier hierarchy models in dynamic settings.

²⁹ Previous research has focused on tunneling in developing markets. 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 A: Potential tax savings

For simplicity assume that a company was bought at the beginning of the year and sold at the end of the year. This transaction is sponsored by a GP. Assume as well that i) it costs 65 for the GP to perform its task (sourcing, monitoring and disposing of a given investment in a company); ii) that LPs hold 100% of the equity of the company and are tax exempt institutional investors; iii) that the company has a yearly earnings before taxes of 100; and iv) that the marginal corporate tax rate is 35%. Consider the following alternative arrangements:

Arrangement 1: LPs pay 65 of management fees to the GP. The company pays 35 of taxes and 65 is distributed to LPs as a dividend. LPs receive nothing, and the GP covers its cost, making zero profit.

Arrangement 2: GP charges 100 to the company for ‘acquiring it and monitoring it’ and has a fee rebating rule in place that rebates 65% of these ‘transaction and monitoring fees’ against management fees. LPs receive nothing. GP pays 35%*35 of taxes and obtains an after tax profit of 22.75. Company pays no taxes.

Arrangement 3: GP charges 81.25 to the company in ‘transaction and monitoring fees’ and has a fee rebating rule in place that rebates 80% of transaction and monitoring fees. LPs pay no management fees (because rebated amount is 65) and receive $65\% \times (100 - 81.25) = 12.2$ as a dividend. The GP makes a profit after taxes of $65\% \times (81.25 - 65) = 10.55$.

Arrangement 1 has no transaction and monitoring fees. Arrangements 2 and 3 have portfolio company fees and dominate arrangement 1 for LPs and GP. Tax authority loses out.

Note also that when LPs are foreign investors, they are subject to the foreign dividend withholding tax of 15%. The above mechanism avoids this tax and thus brings yet another tax advantage for LPs. Finally, and perhaps most importantly, the fee policy does not affect the selling value of the company even though selling values are closely related to EBITDA. The service fees are considered a non-recurring expense. In practice, monitoring fees are added back to the last twelve month EBITDA for the purpose of calculating the value of the company.

Appendix B1: 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 (nine million five hundred and forty five thousand dollars). Increases in the Advisory Fee in subsequent years shall be paid to the Managers in the same proportion as the initial Advisory Fee.

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, or shall cause one or more of its affiliates to, on behalf of itself and the other members of the Company Group (subject to paragraph 6), 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

Appendix B2: Management Service Agreement of Hospital Corporation of America

This Management Agreement (this “Agreement”) is entered into as of November 17, 2006 by and among HCA Inc., a Delaware corporation (the “Company”), Bain Capital Partners, LLC (“Bain”), Kohlberg Kravis Roberts & Co. L.P. (“KKR”), Dr. Thomas F. Frist, Jr., Patricia F. Elcan, William R. Frist and Thomas F. Frist III (each, a “Frist” and collectively, “Frist”) (“Frist”) and Merrill Lynch Global Partners, Inc. (...)

1. Services. Each of the Managers hereby agrees that, during the term of this Agreement (the “Term”), it will provide the following management, consulting and financial and other advisory services to the Company as requested from time to time by the Board of Directors of the Company: (a) advice in connection with the negotiation of agreements, contracts, documents and instruments relating to the Company’s financing; (b) financial, managerial and operational advice in connection with the Company’s business, including, without limitation, advice with respect to the development and implementation of strategies for improving the operating and financial performance of the Company and its subsidiaries; and (c) advice in connection with financing, acquisition, disposition, merger, combination or change of control transactions involving the Company (...) Each of the Managers shall devote such time and efforts to the performance of services contemplated hereby as such Manager deems reasonably necessary or appropriate; provided, however, that no minimum number of hours is required to be devoted by Bain, KKR, ML or each Frist on a weekly, monthly, annual or other basis. (...)

2. Payment of Fees.

(a) The Company will pay to the Managers(...)in consideration of the Managers providing the Financial Advisory Services, an aggregate transaction fee(“Transaction Fee”) in the amount of \$175,000,000(...)divided among the Managers as follows: Bain: \$48,611,111.11, KKR: \$48,611,111.11, ML: \$48,611,111.11, Frist: \$29,166,666.67

(b) During the Term, the Company will pay to the Managers (...)an annual fee (the “Periodic Fee”) of \$15,000,000, such fee to be increased annually at a rate equal to the Percentage Increase in Adjusted EBITDA over the previous year(...)in exchange for the ongoing services provided by the Managers under Section 1 of this Agreement(...)The Periodic Fee shall initially be divided among the Managers as follows: 3/15ths to Frist and 4/15ths to each of Bain, KKR and ML. The allocation of the Periodic Fee shall be appropriately adjusted in the event of any changes to the proportion of the number of Shares owned in the aggregate by each Manager (...)

(c) The Company will, for each financing, acquisition, disposition, merger, combination or change of control transaction involving the Company(...)pay to the Managers(...) an aggregate fee (the “Subsequent Fee”) in connection with each such transaction equal to one percent (1%) of the gross transaction value (...) Each Subsequent Fee shall be divided among the Managers in the same proportion as the Periodic Fee (...)

3. Term. This Agreement shall continue in full force and effect until December 31, 2016(...)this Agreement shall terminate automatically immediately upon the consummation of an initial public offering unless the Requisite Members determine otherwise. In the event of a termination of this Agreement, the Company shall pay each of the Managers(...) (ii) the sum of the net present values(...)of the Periodic Fees that would have been payable with respect to the period from the date of termination until the expiration date (...) The amounts described in clause (ii) above shall be divided among the Managers in the same proportion as the Periodic Fee (...)

4. Expenses; Indemnification. (a) Expenses. The Company will pay on demand all Reimbursable Expenses. As used herein, “Reimbursable Expenses” means (i) all expenses incurred (...) in connection with such transactions (including, without limitation, all air travel (by first class on a commercial airline, by charter or by privately owned airplane, as determined by the party seeking reimbursement) (...)) (b) Indemnity and Liability. The Company will indemnify, exonerate and hold each of the Managers (...) free and harmless from and against any and all actions, causes of action, suits, claims, liabilities, losses, damages and costs and out-of-pocket expenses...

HCA INC.

By: /s/ R. Milton Johnson

Title: Executive Vice President and Chief Financial Officer

Appendix B3: Management Service Agreement of Harrah's Entertainment

This Services Agreement (the "Agreement") is entered into as of January 28, 2008, by and among Harrah's Entertainment, Inc., a Delaware corporation (the "Company"), Apollo Management VI, L.P., on behalf of affiliated investment funds ("Apollo Management"), Apollo Alternative Assets, L.P. ("Apollo Alternative," and, together with Apollo Management, "Apollo") and TPG Capital, L.P. ("TPG," and, together with Apollo, the "Managers"). (...)

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties hereto, intending to be legally bound, hereby agree as follows:

1. Services. Each Manager hereby severally agrees that, during the term of this Agreement (the "Term"), it will provide to the Company (...) from time to time, management, advisory and consulting services in relation to the affairs of the Company (...) The Managers (...) will devote such time and efforts to the performance of the services contemplated hereby as the Managers deem reasonably necessary or appropriate; provided, however, that no minimum number of hours is required to be devoted by the Managers or the Manager Designees on a weekly, monthly, annual or other basis. (...)

2. Payment of Fees.

(a) As consideration to the Managers for their agreement to render the services in Section 1, (...), the Company will pay to the Managers (...) an aggregate transaction fee equal to \$200,000,000 (two hundred million dollars) (the "Transaction Fee"). (...) In addition to the Transaction Fee, (...), the Company will pay to the Managers (...) an amount equal to all out-of pocket expenses incurred (...) including, without limitation, (i) the reasonable fees, expenses and disbursements of lawyers, accountants, consultants and other advisors that may have been retained by the Company and/or any Manager or its affiliates and (ii) any fees (including any financing fees) related to the Merger (all such fees and expenses, in the aggregate, the "Covered Costs").

(b) During the Term, the Company will pay to the Managers (...) an annual monitoring fee equal to the greater of (x) \$30 million and (y) 1.0% (one percent) of the Company's EBITDA (as defined below) (the "Monitoring Fee") as compensation for the services provided by the Managers or the Manager Designees under this Agreement, (...)

(c) During the Term, in addition to the fees paid pursuant to Section 2(b), the Company will pay to the Managers (...) an aggregate fee (the "Subsequent Fee") in connection with the consummation of any financing or refinancing (equity or debt), dividend, recapitalization, acquisition, disposition, spin-off or split-off transactions involving the Company (...) equal to customary fees charged by internationally-recognized investment banks for serving as a financial advisor in similar transactions

4. Term. This Agreement will continue in full force and effect until the last day of the quarter in which the tenth anniversary of the consummation of the Merger occurs; (...) (x) this Agreement may be terminated at any time upon unanimous consent of the Managers and (y) this Agreement shall terminate automatically immediately prior to the earlier of (i) an Initial Public Offering (...) or (ii) (...) (any such sale transaction, a "Sale"), in each case, unless otherwise agreed by both Managers, (...) Apollo and TPG shall be released from any and all obligations and liabilities with respect to provision of the management, advisory and consulting services pursuant to this Agreement (...) Company shall pay to each Manager (...) a lump-sum amount equal to the net present value of the remaining Transaction Fee, the Monitoring Fee, the Subsequent Fee or any other fees pursuant to this Agreement owing and payable by the Company to such Manager (or its Manager Designees) from the date of such Initial Public Offering or Sale, as the case may be, until the expiration of the term of this Agreement (which amount shall be determined 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) (...)

5. Expenses; Indemnification. (a) Expenses. The Company will pay to the Managers (or their respective Manager Designees) on demand all Reimbursable Expenses whether incurred prior to or following the date of this Agreement (...) all air travel (by first class on a commercial airline or by charter, as determined by the Managers or the Manager Designees) and other travel related expenses (b) Indemnity and Liability. The Company will

indemnify, exonerate and hold the Managers (...) free and harmless from and against any and all actions, causes of action, suits, claims, liabilities, losses, damages and costs and out-of-pocket expenses (...) arising out of any action, cause of action, suit, arbitration (...) provided that the foregoing indemnification rights will not be available to the extent that any such Indemnified Liabilities arose on account of such Indemnitee's willful misconduct; and provided, further, that if and to the extent that the foregoing undertaking may be unavailable or unenforceable for any reason (...)

6. Disclaimer and Limitation of Liability; Opportunities.

(a) Disclaimer; Standard of Care. None of the Managers nor any of their respective Manager Designee makes any representations or warranties, express or implied, in respect of the services to be provided by the Managers or the Manager Designees hereunder. In no event will the Managers, the Manager Designees or Indemnitees be liable to the Company or any of its affiliates for any act, alleged act, omission or alleged omission that does not constitute willful misconduct of the Managers or the Manager Designees as determined by a final, non-appealable determination of a court of competent jurisdiction.

(b) Freedom to Pursue Opportunities. In recognition that the Managers, the Manager Designees and their respective Indemnitees currently have, and will in the future have or will consider acquiring, investments in numerous companies with respect to which the Managers, the Manager Designees or their respective Indemnitees may serve as an advisor, a director or in some other capacity, and in recognition that each Manager, each Manager Designee and their respective Indemnitees have myriad duties to various investors and partners (...)

(i) The Managers, the Manager Designees and their respective Indemnitees will have the right: (A) to directly or indirectly engage in any business (including, without limitation, any business activities or lines of business that are the same as or similar to those pursued by, or competitive with, the Company and its subsidiaries), (B) to directly or indirectly do business with any client or customer of the Company or its subsidiaries, (C) to take any other action that a Manager or a Manager Designee believes in good faith is necessary to or appropriate to fulfill its obligations as described in the first sentence of this Section 6(b), (D) not to communicate or present potential transactions, matters or business opportunities to the Company or any of its subsidiaries, and to pursue, directly or indirectly, any such opportunity for itself, and to direct any such opportunity to another Person, and (E) to take any other action permitted pursuant to Section 6.02 of the Stockholders' Agreement or Article XII of the amended and restated certificate of incorporation of the Company.

(ii) Except as provided in Section 6(a), none of the Managers, the Manager Designees nor any of their respective Indemnitees will be liable to the Company or any of its affiliates for breach of any duty (...)

(c) Limitation of Liability. In no event will a Manager, a Manager Designee or any of their respective Indemnitees be liable to the Company or any of its affiliates for any indirect, special, incidental or consequential damages, including, without limitation, lost profits or savings, whether or not such damages are foreseeable...

IN WITNESS WHEREOF, (...)

HARRAH'S ENTERTAINMENT, INC.

By: /s/ Anthony Civale

Title: Director

By: AIF VI Management, LLC, its general partner

By: /s/ Laurie Medley

Title: Vice President

By: Apollo Alternative Assets GP Limited, its general partner

By: /s/ Laurie Medley

Title: Vice President

TPG CAPITAL, L.P.

By: Tarrant Capital, LLC, its general partner

By: /s/ Clive D. Bode

Title: Vice President

Appendix B4: Management Service Agreement of West Corporation

This MANAGEMENT AGREEMENT (this “Agreement”) is entered into as of October 24, 2006 by and among (i) Omaha Acquisition Corp. (“Newco”), a Delaware corporation, (ii) West Corporation, a Delaware corporation (the “Company”), (iii) Quadrangle Advisors II LLC, a Delaware limited liability company (“Quadrangle”), and (iv) THL Managers VI, LLC, a Delaware limited liability company (“THL” and, together with Quadrangle, the “Managers”).(...)

1. Services. Each of the Managers hereby agrees that it will provide the following consulting and management advisory services to the West Companies:

(a) advice in connection with the negotiation and consummation of agreements, contracts, documents and instruments necessary to provide the West Companies with financing on terms and conditions satisfactory to the West Companies;

(b) financial, managerial and operational advice in connection with day-to-day operations, including, without limitation, advice with respect to the development and implementation of strategies for improving the operating, marketing and financial performance of the West Companies;

(c) advice in connection with financing, acquisition, disposition, merger, business combination and change of control transactions involving any of the West Companies (however structured); (...) Each of the Managers will devote such time and efforts to the performance of services contemplated hereby as such Manager deems reasonably necessary or appropriate; provided, however, that no minimum number of hours is required to be devoted by the Managers on a weekly, monthly, annual or other basis. (...)

2. Payment of Fees.

(a) The West Companies, jointly and severally, will pay to the Managers (or such affiliates as they may respectively designate), in consideration of the Managers providing the Financial Advisory Services, an aggregate transaction fee (the “Transaction Fee”) in the amount of \$40,000,000 (...)

(b) During the Term, the West Companies, (...) will pay to the Managers (or such affiliates as they may respectively designate), an aggregate annual periodic fee (the “Periodic Fee”) of \$4,000,000 in exchange for the ongoing services provided by the Managers under this Agreement, (...) divided between the Managers pro rata in proportion to the respective ownership interests (...)

(c) During the Term, the Managers will advise the West Companies in connection with financing, acquisition, disposition and change of control transactions (...) and the West Companies, jointly and severally, will pay to the Managers (...) an aggregate fee (the “Subsequent Fee”) in connection with each such transaction equal to one percent (1%) of the gross transaction value of such transaction, and, in the case of an Initial Public Offering or a Change of Control (...) an amount equal to the net present value (...) of the Periodic Fees that would have been payable to such Managers (...) until the seventh anniversary of such transaction (...)

3. Term. This Agreement will continue (...) until December 31, 2016; (...)

4. Expenses; Indemnification. (a) Expenses. The West Companies will (...) pay on demand all Reimbursable Expenses. As used herein, “Reimbursable Expenses” means all (i) expenses incurred or accrued prior to the Closing Date by any of the Managers or their affiliates in connection with this Agreement, the Transaction or any related transactions, consisting of their respective out-of-pocket expenses for travel and other incidentals in connection with such transactions (including, without limitation, all air travel (by first class on a commercial airline or by charter, as determined by the appropriate Manager)(...)and charges of (A) Ropes & Gray LLP, (B) KPMG, LLC, (...)and (I) any other consultants or advisors (...) retained by the Managers in connection with such transactions(...)

THE COMPANY:

WEST CORPORATION

/s/ Thomas B. Barker

Name: Thomas B. Barker

Title: Chief Executive Officer

Appendix B5: Management Service Agreement of Simmons (1998)

This Advisory Agreement (this "Agreement") is entered into as of the 29th day of October, 1998 by and between Simmons Holdings, Inc., a Delaware corporation (the "Holdings"), Simmons Company, a Delaware corporation (the "Company") and Fenway Partners, Inc., a Delaware corporation ("Fenway"). WHEREAS, Fenway has provided advisory and other services to Holdings and the Company in connection with the acquisition by funds affiliated with Fenway (the "Fenway Funds") of Simmons Holdings, Inc. (the "Acquisition") and the senior secured financing (the "Senior Financing") being provided for the Acquisition pursuant to a credit agreement dated on or about the date hereof by Goldman Sachs Credit Partners L.P. as joint lead arranger and syndication agent (...) Holdings and the Company desire to retain Fenway to provide certain management and advisory services to Holdings and the Company, and Fenway desires to provide such services;(...)

1. SERVICES.(...) a. provide Holdings and the Company with advice in connection with the negotiation and consummation of agreements, contracts, documents and instruments necessary to provide the Company with senior secured financing from banks or other financial institutions or other entities on terms and conditions satisfactory to Holdings and the Company; and b. provide Holdings and the Company with financial, managerial and operational advice in connection with its day-to-day operations, including, without limitation: (i) advice with respect to the investment of funds; and (ii) advice with respect to the development and implementation of strategies for improving the operating, marketing and financial performance of Holdings and the Company.

2. PAYMENT OF FEES. The Company hereby agrees to: a. pay to Fenway (or its designee) a fee in the amount of five million, one hundred thousand dollars (\$5,100,000) and 379,119.069 shares of Class B Common Stock of Holdings in connection with the structuring of the Acquisition and the Senior Financing, together with reimbursement of Fenway's reasonable out-of-pocket expenses incurred on behalf of the Company through the closing date in connection with the Acquisition, such fees and expenses being payable by the Company at the closing of the Acquisition; b. during the Term, pay to Fenway (or its designee) management fees as follows (subject to adjustment as provided below): for the Term of this Agreement, for each fiscal year, an amount equal to 1/4 of 1% of net sales for the immediately preceding fiscal year or such other amount (or formula) as may be mutually agreed among Holdings, the Company and Fenway, (...) c. during the Term, allow Fenway to participate in the negotiation and consummation of any acquisition transactions by Holdings or the Company or any of its direct or indirect subsidiaries, and pay to Fenway (...) such customary fee as may be charged therefore by Fenway in connection therewith; provided, however, that in each case such fee shall not exceed the greater of (i) \$1,000,000 or (ii) one and one-half percent (1 1/2%) of the aggregate transaction value (including liabilities assumed);(...)

d. in the event of an acquisition or series of acquisitions of another business or businesses (...) wherein the acquired entities or businesses have an aggregate enterprise value in excess of \$25,000,000, thereafter, if appropriate under the circumstances, pay to Fenway an increase to the management fees payable pursuant to Section 2(b) above as is mutually agreed by the Company and Fenway (it being agreed that the amount of any such increase will be negotiated in good faith between the Company and Fenway). e. in the event of an initial public offering of Common Stock of Holdings or the Company, the parties agree to negotiate in good faith any adjustments to the fee as may be customary and appropriate based upon market conditions and the participation of Fenway in the business, financings and acquisition of Holdings and the Company (including, if applicable the termination of the Agreement); provided, however, that, nothing contained herein shall require Holdings or the Company to pay Fenway the present value of future payments under this Agreement through the term of this Agreement or any other fee in respect of such termination or adjustment.(...)

3. TERM. This Agreement shall continue in full force and effect, unless and until terminated by mutual consent of the parties, for a minimum of ten years; and thereafter for so long as Fenway (...) continues to carry on the business of providing services of the type described in Section 1 above; (...)

4. EXPENSES; INDEMNIFICATION.

a. Expenses. (...) Holdings and the Company agree to pay on demand reasonable expenses incurred by Fenway and the Fenway Funds in connection with this Agreement,(...)(i) the reasonable fees and disbursements of: (A) Ropes & Gray, special counsel to Fenway and the Fenway Funds, (B) Ernst & Young, accountant to Fenway and the Fenway Funds, (...)

The Company:

SIMMONS COMPANY

By /s/ Zenon S. Nie Title: Chief Executive Officer (...)

Appendix B6: Management Service Agreement of Simmons (2003)

This Management Agreement (this "AGREEMENT") is entered into as of the 19th day of December, 2003, by and between Simmons Company, a Delaware corporation (the "COMPANY"), and THL Managers V, LLC, a Delaware limited liability company (the "SPONSOR"). WHEREAS, certain affiliates of Thomas H. Lee Partners, L.P. ("THL") have provided equity financing to the Company's indirect parent, THL Bedding Holding Company (...) THL Bedding acquired all of the outstanding shares of Simmons Holdings, Inc. (the "ACQUISITION"). WHEREAS, immediately following the Acquisition, THL Bedding merged with and into Simmons Holdings, Inc. and Simmons Holdings, Inc. merged with and into Simmons Company, with Simmons Company as the surviving entity. WHEREAS, the Sponsor has staff specifically skilled in corporate finance, strategic corporate planning, and other management skills and advisory services. WHEREAS, the Company will require the Sponsor's special skills and management advisory services in connection with its business operations and execution of its strategic plan. WHEREAS, the Sponsor is willing to provide such skills and services to the Company. NOW, THEREFORE, in consideration of the mutual covenants contained herein, (...) the parties hereto, intending to be legally bound, hereby agree as follows:

1. Services. The Sponsor hereby agrees that if, during the term of this Agreement (the "TERM"), the Company reasonably and specifically requests that the Sponsor provide the services set forth below and the Sponsor agrees to provide such services, the Sponsor or one of its affiliates will provide the following services to the Company and its subsidiaries: (a) advice in connection with the negotiation and consummation of agreements, contracts, documents and instruments related to the Company's finances or relationships with banks or other financial institutions; or (b) advice with respect to the development and implementation of strategies for improving the operating, marketing and financial performance of the Company, and other senior management matters related to the business, administration and policies of the Company. The Sponsor shall have no obligation to the Company as to the method or timing of services rendered hereunder, and the Company shall not have any right to dictate or direct the details of the performance of services by the Sponsor rendered hereunder. The parties hereto expressly acknowledge that the services to be performed hereunder by the Sponsor shall not include investment banking or other financial advisory services rendered by Sponsor or its affiliates to the Company in connection with any specific acquisition, divestiture, refinancing or recapitalization by the Company or any of its subsidiaries for which the Sponsor may be entitled to receive additional compensation by mutual agreement of the Company or its subsidiary and the Sponsor(...)

2. Payment of Fees. In exchange for the Sponsor's arrangement of the equity financing and agreement to provide the services set forth herein, the Company hereby agrees to pay to the Sponsor (...) the following fees:

(a) a transaction fee in connection with the transactions contemplated in the Stock Purchase Agreement payable at the Closing (as defined in the Stock Purchase Agreement) of \$20,000,000; and (b) a management fee (the "FEE") equal to the greater of (i) \$1,500,000 per year or (ii) 1.0% of Consolidated EBITDA (...)

3. Term. This Agreement shall be effective as of the date hereof (...) In the event that the Sponsor terminates this Agreement in accordance with clause (c) above of this Section, the Company agrees to pay the Sponsor a cash lump-sum termination fee equal to the net present value of the fees that would have been payable to such Sponsor (but for the termination hereof) pursuant to Section 2(b) hereof for a period of seven (7) years from the date of such termination calculated using a discount rate equal to the ten-year treasury rate on the date of such termination.

4. Expenses; Indemnification.

(a) Expenses. In addition to the fees set forth in Section 2 hereof, the Company agrees to pay on demand all reasonable costs and expenses incurred by the Sponsor and their affiliates or any of them in connection with this Agreement and in connection with performing services hereunder including but not limited to air travel charged at charter equivalent rates, legal, consulting, out of pocket and other expenses, including but not limited to the fees and disbursements of Weil, Gotshal & Manges LLP, counsel to the Sponsor, and any other consultants or advisors retained by the Sponsor or its respective counsel arising in connection therewith, including but not limited to the preparation, negotiation and execution of this Agreement, the performance of services hereunder (including, without limitation, fees and expenses of independent professionals, research, transportation and per diem costs) (...)

By: /s/ William S. Creekmuir, Title: Executive Vice President and CFO (...)

Appendix C: Data collection

To illustrate our data collection process we use the largest transaction in our sample: Energy Future Holdings (EFH) sponsored by KKR, Goldman Sachs (GS) and TPG. The MSA is shown in Figure 3 and was published as Exhibit “10 YYY” to EFH’s 10-K Annual Report filed on 03/31/2008. And can be found under:

<http://www.sec.gov/Archives/edgar/data/1023291/000119312508071313/0001193125-08-071313-index.htm>

Filings start at the LBO, and cover every fiscal year thereafter. We take the fee information from 10-K annual reports for the years 2007-2015. The reports can be downloaded from

<https://www.sec.gov/Archives/edgar/data/1023291/000102329113000003/efh-12312012x10k.htm>

Monitoring fees are split across GPs as specified in the MSA. For the other fees we specify below how they are split.

- 2007: \$300 million of transaction fees and \$8 million of monitoring fees (covering the period October 11 to December 31, 2007).
- 2008: \$35 million of monitoring fees including expenses
- 2009: \$36 million of monitoring fees including expenses
- 2009: \$750k to GS, \$260k to KKR, and \$260k to TPG for services as advisors and dealer managers in Note exchange offer transactions, and refinancing old notes with new Senior Secured Notes
- 2010: \$37 million of monitoring fees including expenses
- 2010: \$4 million paid to GS in connection with the issuance of new Senior Secured Notes, and \$7 million to GS for continued role as dealer manager and solicitation agent for the issuance of the Note Exchange Offers initiated in 2009
- 2011: \$37 million of monitoring fees including expenses
- 2011: \$17 million to GS as joint book-runner and joint lead-arranger of Senior Secured Loan facilities. \$5 million to KKR and \$5 million to TPG as advisory fees for these Senior Secured Loan facilities.
- 2011: \$13.5 million to GS as joint book-running manager and initial purchaser in the issuance of two Senior Secured Note tranches. \$800k to KKR, and \$800k to TPG as co-manager, initial purchaser and advisor for these two Senior Secured Note tranches.
- 2012: \$38 million of monitoring fees including expenses
- 2012: \$1.1 million to GS as dealer-manager and solicitation agent fees in Note offer exchange transactions. \$11 million to GS as joint book-running manager and initial purchaser in three separate Note offerings. \$4 million to KKR and \$4 million to TPG as co-manager, advisor and initial purchaser in those transactions.
- 2013: \$29 million of monitoring fees including expenses. From the fourth quarter of 2013, fees are suspended. Exact wording: “We had previously paid these fees on a quarterly basis, however, beginning with the quarterly management fee due December 31, 2013, the Sponsor Group, while reserving the right to receive the fees, directed EFH Corp. to suspend payments of the management fees for an indefinite period. Effective with the Petition Date, EFH Corp. suspended allocations of such fees to TCEH and EFIH. Fees accrued as of the Petition Date have been reclassified to liabilities subject to compromise (LSTC).”

EFH filed for Chapter 11 on April 29, 2014, six months after suspending fees. Note that EFH would successfully come out of chapter 11 then all of the suspended fees could be claimed by the GPs.

Annual monitoring fees contain expense reimbursements in this case, which is unusual. Given that the monitoring fees paid are in line with the amount specified in the MSA we assume that expenses are negligible and we simply record the above amounts as monitoring fees. When expenses are specified, we always deduct them. All the fees above other than transaction and monitoring fees are grouped under the heading ‘other fees.’

There is also a Related Party Transaction section in the 10-K filings which is dedicated to arm’s-length transactions performed with its sponsors. These transactions are not described in great detail because they are arm’s length (or worth less than \$120k) and we do not record them. Exact wording: “Affiliates of GS Capital Partners have from time to time engaged in commercial and investment banking and financial advisory transactions with EFH Corp. in the normal course of business (...) affiliates of GS are party to certain commodity and interest rate hedging transactions with EFH Corp. in the normal course of business. From time to time affiliates of the Sponsor Group may acquire debt or debt securities issued by EFH Corp. or its subsidiaries in open market transactions or through loan syndications.”

< Appendix Table 1 >

Appendix D: The different portfolio company fees

Transaction fees: Fees received by the advisor or its affiliates for transactions that are consummated by the fund with respect to a particular portfolio company.

Monitoring fees: Fees received by the advisor or its affiliates in consideration for general ongoing advisory services provided in respect of fund investments excluding, specific types of advisory services (e.g., financial advisory services, asset/property management services, capital markets advisory services, etc.).

Directors’ fees: Cash and non-cash directors’ fees received by the advisor or its affiliates in connection with serving as directors on the board of portfolio companies.

Commitment fees: Fees received by the advisor or its affiliates in consideration for making available equity or debt commitments in respect of fund investments, regardless of whether such commitments are actually utilized by the fee payor (e.g., a fee on unused amounts in a revolving credit facility).

Break-up and topping fees: Fees received by the advisor or its affiliates relating to a potential investment by the fund that was not consummated and, in the case of topping fees, to the extent the transaction is not consummated as a result of another bidder.

Financial advisory fees: Fees received by the advisor or its affiliates in consideration for advisory services rendered to the underwriting syndicate and other financial advisory services in respect of fund investments.

Capital markets fees: Fees received by the advisor or its affiliates in consideration for advisory services rendered by the capital markets group in respect of underwriting services and financial advisory services to the underwriting syndicate

Source: <https://www.calpers.ca.gov/docs/board-agendas/201511/invest/Workshop02-01.pdf> (slide 90)

Appendix E: Imputed fees

Appendix Table 2 shows the different categories our observations fall into. First we have 371 observations that are exited and with full SEC coverage. Next, there are 83 observations in total that we classify as ‘complete’ because the missing information should not impact our fee estimates. This includes observations for which missing years are beyond the contractual duration of the fees; companies whose filings stop when they entered chapter 11 and when only the first or last year is missing.

More specifically, in all cases but two we observed that companies kept paying fees while in chapter 11 (among the cases where they kept filling with the SEC). Hence we assume that if they do not file but are in chapter 11 fees are zero and known. We could miss however fees charged when a company comes out of chapter 11 successfully but is not required to file anymore. In those probably rare cases, we would be underestimating the fees paid by these companies. We notice that the first and last year of an LBO, fees are either zero or pro-rata of the number of months the LBO was on. To be conservative we assume that in those years fees are zeros if this is the only missing piece of information on that deal.

The rest of the observations are classified as incomplete. There are 19 exited LBOs with filings missing only in their final years. For these we repeat the last fee charged until the final year of the LBO because we observe that monitoring fees are often constant over the life of an investment. The median change in monitoring fee from one year to the next is zero. We note that our imputed monitoring fee brings the total monitoring fee on these LBOs close to the transaction fee. Since these two fees are overall of the same order of magnitude, this may indicate that our assumption is reasonable. \$110 million gets added. Similarly, 13 exited LBOs have filings missing only in their early years. We operate as in the previous case and impute \$29 million of fees.

There are 50 LBOs for which we only have the MSA.³⁰ 47 LBOs are exited and 3 LBOs are not exited. We find that contractual monitoring fees and monitoring fees paid are highly correlated. In addition, the median contractual monitoring fees equal the amount charged (while the mean is 3% lower). We assume that the contractual amount of monitoring fees is charged in each year of the LBO life and that no termination fee was paid unless the MSA states that a given lump sum payment is made at termination (7 cases, total of \$45 million). \$454 million are added.³¹

57 LBOs are not exited. We do not impute any fees except when there are missing fees before the end of our sample: \$186 million is added. Arguably, non-exited deals have a truncated time-series of fees and their fees are biased downwards. The bias may be small as all on-going deals are at least four years old and that we have consistently leaned on the conservative side for all fees recorded and imputed. If we use more aggressive assumptions for all incomplete cases (e.g. assuming they all charged a termination fee, on-going fees last until their tenth year) the total imputed would have been twice as much.

³⁰ 10 of these LBOs are public to private transactions; the MSA is part of the S4 form they have to file in that situation. They did not issue public traded debt nor exited via an IPO. The rest are cases where the filings say: we paid fees according to the MSA. We impute these fees following the MSA but include them here as incomplete because we are not 100% certain of the amounts.

³¹ Again, the sum of monitoring fees after this inference is close although lower than the sum of transaction fees.

Table 1: Portfolio Company Fees Charged

This table shows descriptive statistics on the five categories of portfolio company fees we collected data on: LBO transaction fees, charged at LBO inception; add-on transaction fees, charged when add-on acquisitions are made; regular monitoring fees, charged during the life of the LBO investment; accelerated monitoring fees, charged when the LBO investment is exited, and ‘other’ fees charged during the life of the LBO investment and which contain predominantly refinancing fees. TEV is the sum of Total Enterprise Values of the original LBO plus that of any add-on acquisitions all expressed in 2004 US dollars. Sales and EBITDA is the sum of yearly sales and EBITDA figures all expressed in 2004 US dollars, from LBO inception to exit. LBO fund equity equals TEV 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%
. TEV	0.81%	0.07%	0.44%	0.28%	0.15%	1.75%
. Sales	0.26%	0.02%	0.14%	0.09%	0.05%	0.57%
. EBITDA	1.66%	0.15%	0.91%	0.57%	0.30%	3.59%
. LBO fund equity	2.87%	0.26%	1.56%	0.98%	0.52%	6.19%

Panel B: Fees per exit channel

	N_obs	TEV	Fee as % of 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%	1.39E-05	0.10%	1.44%
Bankruptcy	133	194,899	0.73%	0.13%	0.40%	0.07%	0.15%	1.48%
IPO	253	480,621	0.84%	0.06%	0.44%	0.45%	0.16%	1.95%
All	454	830,188	0.81%	0.07%	0.44%	0.28%	0.15%	1.75%

Panel C: Fees over time (LBO inception date)

	N_obs	TEV	Fee as % of 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%
All	454	830,188	0.81%	0.07%	0.44%	0.28%	0.15%	1.75%

Panel D: Companies that paid the highest fees

(million of 2014 US dollars)	TEV	LBO transaction	Add-on transactions	Regular monitoring	Accelerated monitoring	Other	All	% 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%
Freescale 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: Sum of fees paid

(million of 2014 US dollars)	N_obs	TEV	LBO transaction	Add-on transactions	Regular monitoring	Accelerated monitoring	Other	All	% 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. LBO debt (*LBO TEV*) is the total debt (*enterprise value*) at the time of LBO inception. LTM stands for Last Twelve Months prior to LBO inception. GPs ownership is the fraction of equity owned by all the GPs who sponsor the LBO. EBT is Earnings before Taxes. The ratio of TEV (*debt*) over EBITDA is computed only when LTM EBITDA is positive. Q1 and Q3 stand for 25th and 75th percentile respectively. 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 the number of years between LBO inception and exit. 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 between the year of LBO inception and year of LBO exit. EBT (*Corporation taxes*) is the sum of yearly Earnings Before Tax (*Corporation taxes paid, or credited*) figures all expressed in 2004 US dollars, from LBO inception to exit.

Descriptive statistics: Sample of LBOs	N_obs	Mean	St. Dev.	Q1	Median	Q3
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	1,886	4,279	344	711	1,670
EBITDA	592	956	2,472	151	338	876
LBO Debt to LBO TEV (*100)	581	62.8	16.7	53.1	64.2	74.2
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
Add-ons (1/0)	592	0.37	0.48	0.00	0.00	1.00
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
Holding period	526	4.10	2.74	1.95	3.40	5.97
Estimated GPs return on equity	451	2.83	3.08	1.11	1.86	3.44
Transaction fees (% of TEV)	592	0.9%	0.7%	0.4%	1.0%	1.4%
Monitoring fees (% of TEV)	592	1.0%	1.1%	0.0%	0.6%	1.4%
Transaction fees (% of EBITDA)	592	2.5%	2.9%	0.4%	1.6%	3.6%
Monitoring fees (% of EBITDA)	592	1.9%	2.2%	0.1%	1.1%	2.6%
Transaction fees (% of Equity)	581	3.8%	3.4%	1.1%	3.1%	5.5%
Monitoring fees (% of Equity)	581	3.9%	5.0%	0.1%	1.9%	5.6%
Club deal (1/0)	592	0.46	0.50	0.00	0.00	1.00
Number of GPs invested in the focal LBO	592	1.76	1.05	1.00	1.00	2.00
Total equity ownership by GPs	592	0.86	0.16	0.79	0.91	0.98
Credit spread	592	0.84	0.24	0.66	0.81	0.96
EBITDA/TEV minus 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	509	0.17	0.33	0.00	0.10	0.25
Volatility of Sales over Total Asset	478	0.15	0.13	0.05	0.11	0.21
Volatility of EBITDA over Total Asset (*10)	472	0.34	0.28	0.15	0.24	0.44
A GP employee is part of the PC signatures	296	0.39	0.49	0.00	0.00	1.00
EBT	540	-192	1,762	-109	-3	59
EBT is negative (1/0)	540	0.53	0.50	0.00	1.00	1.00
Corporation taxes	528	-2.0	316.8	-5.1	7.4	40.0

Table 3: Deal Characteristics and Portfolio Company Fees

This table shows 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.

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

Total Enterprise Value (log)	0.11	0.12	0.08	0.03	0.16	0.13	0.11	0.08
	<i>1.32</i>	<i>1.43</i>	<i>0.73</i>	<i>0.30</i>	<i>1.30</i>	<i>1.56</i>	<i>1.28</i>	<i>1.02</i>
EBITDA (log)	0.65 ^a	0.63 ^a	0.68 ^a	0.70 ^a	0.58 ^a	0.62 ^a	0.65 ^a	0.63 ^a
	<i>8.93</i>	<i>8.47</i>	<i>7.02</i>	<i>6.46</i>	<i>4.32</i>	<i>7.09</i>	<i>9.02</i>	<i>7.96</i>
Total equity ownership by GPs	0.43	0.43	0.48	0.26	0.33	0.50	0.46	0.49
	<i>1.35</i>	<i>1.38</i>	<i>1.30</i>	<i>0.66</i>	<i>0.82</i>	<i>1.37</i>	<i>1.41</i>	<i>1.34</i>
Number of GPs invested in the focal LBO	0.11 ^b	0.10 ^c	0.12 ^c	0.12 ^c	0.09	0.16 ^a	0.11 ^b	0.12 ^b
	<i>2.02</i>	<i>1.77</i>	<i>1.88</i>	<i>1.92</i>	<i>1.37</i>	<i>2.94</i>	<i>2.03</i>	<i>2.02</i>
Bankrupted (1/0)	-0.24	-0.23	-0.17	-0.22	-0.41 ^b	-0.19	-0.25	-0.20
	<i>-1.54</i>	<i>-1.46</i>	<i>-0.84</i>	<i>-0.96</i>	<i>-2.27</i>	<i>-1.08</i>	<i>-1.58</i>	<i>-1.21</i>
IPO exited (1/0)	0.11	0.14	0.16	0.16	0.25 ^b	0.07	0.11	0.09
	<i>1.30</i>	<i>1.48</i>	<i>1.59</i>	<i>1.42</i>	<i>2.16</i>	<i>0.63</i>	<i>1.31</i>	<i>0.97</i>
Time trend	0.04 ^a	0.04 ^a	0.05 ^a	0.06 ^a	0.06 ^a	0.06 ^a	0.05 ^a	0.08 ^a
	<i>3.41</i>	<i>3.35</i>	<i>3.44</i>	<i>3.86</i>	<i>3.84</i>	<i>3.87</i>	<i>4.87</i>	<i>4.23</i>
Add-ons (1/0)	0.10	0.09	0.07	0.09	0.03	0.11	0.10	-0.02
	<i>1.13</i>	<i>0.95</i>	<i>0.67</i>	<i>0.79</i>	<i>0.32</i>	<i>1.21</i>	<i>1.11</i>	<i>-0.16</i>
Credit spread	0.26	0.30	0.33	0.30	0.06	0.24		
	<i>1.05</i>	<i>1.17</i>	<i>1.24</i>	<i>1.15</i>	<i>0.20</i>	<i>0.76</i>		
Leverage (*100)		0.00						
		<i>1.40</i>						
LBO debt to LTM EBITDA			0.02 ^b	0.03 ^b				
			<i>2.27</i>	<i>2.28</i>				
EBITDA CAGR				-0.04				
				<i>-0.27</i>				
LBO TEV to LTM EBITDA				0.00				
				<i>-0.26</i>				
Volatility of EBITDA over Total Asset (*10)					0.35			
					<i>1.64</i>			
Total EBT is negative (1/0)					0.16			
					<i>1.26</i>			
Holding period					-0.01			
					<i>-0.27</i>			
Estimated GPs return on equity						0.07		
						<i>0.92</i>		
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	No	No	No	No	No	No	No	No
Adjusted R-squared	0.44	0.44	0.44	0.45	0.44	0.47	0.44	0.47
N_obs	592	581	481	431	410	451	592	592

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

Total Enterprise Value (log)	0.76 ^a	0.78 ^a	0.74 ^a	0.79 ^a	0.67 ^a	0.79 ^a	0.77 ^a	0.78 ^a
	10.10	10.63	8.69	10.00	5.99	9.80	10.13	9.39
EBITDA (log)	0.23 ^a	0.20 ^a	0.22 ^a	0.15 ^b	0.34 ^a	0.25 ^a	0.23 ^a	0.24 ^a
	3.42	3.17	2.87	2.02	3.02	3.53	3.39	3.18
Total equity ownership by GPs	0.21	0.17	0.12	0.14	0.24	0.31	0.19	0.23
	1.09	0.83	0.47	0.54	0.87	1.36	0.98	0.99
Number of GPs invested in the focal LBO	0.11 ^a	0.10 ^b	0.13 ^a	0.12 ^a	0.09 ^b	0.12 ^a	0.11 ^a	0.11 ^b
	2.79	2.41	3.07	2.93	2.00	2.94	2.78	2.46
Bankrupted (1/0)	0.03	0.02	0.14	0.14	0.14	0.18	0.04	0.07
	0.32	0.17	1.11	1.16	1.01	1.18	0.39	0.63
IPO exited (1/0)	0.08	0.10	0.14 ^c	0.13	0.14	0.14	0.08	0.06
	1.11	1.29	1.65	1.46	1.55	1.33	1.09	0.72
Time trend	0.01	0.01	0.03 ^b	0.03 ^b	0.01	0.02	0.01	-0.01
	1.01	1.16	2.19	2.18	0.92	1.25	0.58	-0.28
Add-ons (1/0)	0.21 ^b	0.19 ^b	0.14	0.13	0.22 ^b	0.29 ^a	0.21 ^b	0.13
	2.40	1.99	1.30	1.20	2.24	3.34	2.41	1.20
Credit spread	-0.20	-0.17	-0.33	-0.38	-0.48	-0.34		
	-0.76	-0.60	-1.08	-1.22	-1.32	-0.88		
Leverage (*100)		0.01 ^b						
		1.97						
LBO debt to LTM EBITDA			0.00	0.04				
			-0.52	1.58				
EBITDA CAGR				-0.06				
				-0.32				
LBO TEV to LTM EBITDA				-0.05 ^b				
				-2.52				
Volatility of EBITDA over Total Asset (*10)					0.15			
					1.00			
Total EBT is negative (1/0)					0.24 ^b			
					2.18			
Holding period					-0.06 ^a			
					-2.79			
Estimated GPs return on equity						0.08		
						0.84		
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	No	No	No	No	No	No	No	No
Adjusted R-squared	0.55	0.56	0.53	0.55	0.58	0.57	0.55	0.55
N_obs	592	581	481	431	410	451	592	592

Table 4: Descriptive Statistics of the GP-LBO Sample

The unit of observation is a GP participating in a LBO. Data on amounts raised and GP performance are from Preqin and are expressed in millions of US dollars. Fund performance is measured by cash multiple (total distributed plus net asset value, all divided by total invested, net of all fees). GFC stands for Global Financial crisis of 2008. Q1 and Q3 stand for 25th and 75th percentile respectively. GP age is computed from the vintage year of the first fund raised by GPs. GP fund age is the difference between year of LBO inception and fund vintage year. If a GP invests in an LBO with more than one fund, we take the average across funds.

Descriptive statistics: Sample of LBOs	N_obs	Mean	St. Dev.	Q1	Median	Q3
Monitoring fees	1044	7.79	16.05	0.00	1.92	8.43
Transaction fees	1044	9.60	18.76	0.00	2.83	11.70
Total EBITDA during investment	1044	481	1,235	48	162	470
Total Enterprise Value	1044	967	2,080	116	337	933
Monitoring fees (% of EBITDA)	1044	1.9%	2.6%	0.0%	0.9%	2.6%
Transaction fees (% of TEV)	1044	1.0%	1.0%	0.0%	1.0%	1.6%
Monitoring fees (% of TEV)	1044	1.0%	1.4%	0.0%	0.4%	1.4%
Monitoring fees (% of EBITDA) charged by GP on previous LBOs	669	1.3%	1.2%	0.3%	1.1%	1.9%
Transaction fees (% of TEV) charged by GP on previous LBOs	669	1.0%	0.7%	0.6%	1.1%	1.5%
Monitoring fees (% of TEV) charged by GP on previous LBOs	669	0.8%	0.8%	0.1%	0.6%	1.1%
Change in Monitoring fees (% of EBITDA)	669	0.8%	2.1%	-4%	0.0%	1.5%
Change in Transaction fees (% of TEV)	669	0.0%	0.9%	-5%	0.0%	0.6%
Change in Monitoring fees (% of TEV)	669	0.2%	1.0%	-4%	0.0%	0.7%
Amount raised post-LBO by GP	761	6,925	8,305	880	3,250	9,269
Amount raised pre-LBO by GP	761	7,050	9,344	1,000	3,450	8,748
Growth in amount 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
Pre-LBO GP performance volatility	518	0.58	0.25	0.48	0.59	0.72
GP lacks reputation	681	0.35	0.48	0.00	0.00	1.00
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
GP fund age	702	1.94	1.79	1.00	2.00	3.00
GP fund performance	666	1.84	0.59	1.48	1.72	2.22
Distance to GFC	1044	6.45	4.59	3.00	6.00	10.00
Amount raised post GFC by GP	766	6,862	7,843	804	3,500	11,437
Amount raised pre GFC by GP	766	14,175	13,556	2,500	7,400	28,185
Growth in amount 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
Maximum rebate rate for funds of that vintage and size	776	0.80	0.17	0.65	0.80	1.00
Founding partners have a graduate degree (%)	614	0.69	0.39	0.50	1.00	1.00
Founding partners have a consulting background (%)	615	0.10	0.24	0.00	0.00	0.00
Founding partners have an I-banking background (%)	615	0.41	0.36	0.00	0.33	0.67
GP going public	1044	0.05	0.22	0.00	0.00	0.00
GP age in 2008	832	17.72	7.59	13.00	17.00	23.00

Table 5: GP going public and fees

Panel A shows the sum of fees charged by a given GP, or group of GPs, over a given time periods divided by either EBITDA or TEV. EBITDA (*TEV*) is adjusted by GP equity ownership. Three GPs went public in 2007: Apollo, Blackstone and KKR. Blackstone filed on March 22nd 2007, KKR filed on July 3rd 2007, and Apollo filed a Rule 144-A Private Placement of Shares on August 8, 2007. The three similarly large GPs that decided to remain private in 2007 are Bain capital, Carlyle and TPG. Panel B shows amount raised and performance of the funds raised by these six GPs. GPs are anonymized.

Panel A: Fee policy pre and post 2003

	Fees charged on pre-2003 LBOs				Fees charged on post-2003 LBOs				Percentage change in fees charged		
	Monitoring	Monitoring	Transaction	N_obs	Monitoring	Monitoring	Transaction	N_obs	Monitoring	Monitoring	Transaction
	(% of EBIDTA)	(% of TEV)	(% of TEV)		(% of EBIDTA)	(% of TEV)	(% of TEV)		(% of EBIDTA)	(% of TEV)	(% of TEV)
<i>GPs going public</i>											
GP1	0.92%	0.69%	0.68%	9	1.99%	1.02%	0.98%	20	115%	48%	43%
GP2	1.37%	0.99%	1.03%	10	2.24%	1.49%	1.16%	17	64%	50%	12%
GP3	0.77%	0.51%	0.92%	14	1.43%	0.87%	1.02%	16	85%	70%	11%
All 3 GPs	1.00%	0.69%	0.93%	33	1.81%	1.08%	1.05%	53	81%	55%	13%
<i>Similar GPs not going public</i>											
GP4	3.05%	1.35%	1.44%	17	1.28%	0.98%	0.72%	22	-58%	-28%	-50%
GP5	1.35%	0.76%	0.78%	8	1.30%	0.52%	0.85%	15	-4%	-32%	8%
GP6	1.42%	0.83%	1.59%	13	1.37%	0.53%	0.96%	12	-4%	-36%	-40%
All 3 GPs	2.00%	1.03%	1.31%	38	1.30%	0.70%	0.84%	49	-35%	-32%	-36%
Rest of GPs	1.27%	0.66%	1.15%	484	1.59%	0.69%	0.90%	325	25%	4%	-22%

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

	Funds with vintage year 2004 or earlier			Funds with vintage year 2005 to 2012		
	Total raised	Average Multiple	Average IRR	Total raised	Average Multiple	Average IRR
<i>GPs going public</i>						
GP 1	11.97	2.31	23.08	30.03	1.78	17.06
GP 2	14.29	2.05	22.57	37.90	1.38	10.08
GP 3	25.56	2.45	15.61	44.94	1.47	10.73
<i>Similar GPs not going public</i>						
GP 4	10.96	2.08	19.37	29.55	1.42	8.34
GP 5	11.02	2.17	20.33	47.65	1.48	10.43
GP 6	15.12	2.26	20.73	47.02	1.38	9.88

Table 6: GP Characteristics and Portfolio Company Fees

This table shows results from OLS regressions. The unit of observation is a GP participating in an LBO. 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.

Panel A: Dependent variable is Monitoring Fees Relative to EBITDA

Total EBITDA during investment	-1.04 ^a	-1.12 ^a	-1.09 ^a	-1.06 ^a	-1.18 ^a	-0.91 ^a
	<i>-5.10</i>	<i>-6.10</i>	<i>-5.87</i>	<i>-5.02</i>	<i>-4.68</i>	<i>-3.25</i>
Total Enterprise Value	0.52 ^a	0.44 ^b	0.45 ^b	0.46 ^b	0.45 ^b	0.62 ^b
	<i>2.82</i>	<i>2.38</i>	<i>2.20</i>	<i>2.40</i>	<i>2.30</i>	<i>2.25</i>
Bankrupted (1/0)	-0.27	-0.42	-0.25	-0.45 ^c	-0.50 ^c	-0.15
	<i>-1.18</i>	<i>-1.60</i>	<i>-0.92</i>	<i>-1.81</i>	<i>-1.94</i>	<i>-0.43</i>
IPO exited (1/0)	0.26	0.71 ^a	0.80 ^a	0.38 ^c	0.43 ^c	0.78 ^b
	<i>1.41</i>	<i>2.93</i>	<i>3.17</i>	<i>1.93</i>	<i>1.76</i>	<i>2.33</i>
Total equity ownership by GPs	-2.03 ^a	-2.41 ^a	-2.39 ^a	-2.20 ^b	-2.56 ^b	-2.07
	<i>-2.66</i>	<i>-2.76</i>	<i>-2.67</i>	<i>-2.41</i>	<i>-2.09</i>	<i>-1.42</i>
Number of GPs invested in the focal LBO	0.33 ^a	0.35 ^a	0.40 ^a	0.45 ^a	0.41 ^a	0.49 ^b
	<i>2.93</i>	<i>3.18</i>	<i>3.20</i>	<i>3.42</i>	<i>2.93</i>	<i>2.50</i>
Add-ons (1/0)	-0.25	-0.11	-0.01	-0.22	-0.02	-0.54
	<i>-1.34</i>	<i>-0.49</i>	<i>-0.05</i>	<i>-1.08</i>	<i>-0.08</i>	<i>-1.57</i>
Time trend	0.04	0.03	0.03	0.08	0.07	0.12
	<i>0.72</i>	<i>0.80</i>	<i>0.71</i>	<i>1.10</i>	<i>1.33</i>	<i>1.48</i>
GP ownership	1.99 ^a	1.98 ^a	1.86 ^a	2.30 ^a	2.18 ^a	1.43
	<i>3.63</i>	<i>3.47</i>	<i>3.04</i>	<i>3.77</i>	<i>2.78</i>	<i>1.62</i>
GP going public	1.08 ^a	1.08 ^a	1.13 ^a	0.99 ^a		
	<i>3.54</i>	<i>2.88</i>	<i>3.10</i>	<i>2.70</i>		
Monitoring fees (% of EBITDA) of previous GP's LBOs		0.89 ^a	0.97 ^a			
		<i>8.84</i>	<i>9.78</i>			
GP lacks reputation			0.70 ^a			
			<i>3.06</i>			
GP age				-0.04 ^b		
				<i>-2.08</i>		
Founding partners have a graduate degree (%)					0.96 ^b	
					<i>2.20</i>	
Founding partners have a consulting background (%)					1.48 ^a	
					<i>2.75</i>	
Founding partners have an I-banking background (%)					0.24	
					<i>0.43</i>	
GP fund age						-0.13
						<i>-1.35</i>
Amount raised pre LBO by GP						-0.30
						<i>-1.24</i>
GP fund performance						0.33
						<i>0.81</i>
Pre LBO GP performance						-1.01
						<i>-1.50</i>
Pre LBO GP performance volatility						0.09
						<i>0.12</i>
Maximum rebate rate for funds of that vintage and size						-0.41
						<i>-0.37</i>
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.17	0.36	0.41	0.21	0.22	0.20
N_obs	1044	669	561	832	595	451

Panel B: Dependent variable is Transaction Fees Relative to TEV

Total EBITDA during investment	0.22 ^a	0.13 ^c	0.15 ^c	0.20 ^b	0.15 ^c	0.20 ^b
	2.86	1.93	1.86	2.51	1.69	2.31
Total Enterprise Value	-0.02	-0.05	-0.08	-0.02	-0.03	-0.01
	-0.35	-0.65	-0.87	-0.25	-0.37	-0.06
Bankrupted (1/0)	0.00	-0.04	0.00	-0.17	-0.08	0.02
	-0.01	-0.35	0.02	-1.53	-0.58	0.18
IPO exited (1/0)	0.07	0.12	0.15 ^c	0.05	0.02	0.09
	0.91	1.35	1.81	0.63	0.23	1.07
Total equity ownership by GPs	-1.16 ^a	-0.73 ^b	-0.51	-0.95 ^a	-1.06 ^b	-0.30
	-3.70	-2.17	-1.47	-2.68	-2.45	-0.76
Number of GPs invested in the focal LBO	0.10 ^a	0.11 ^b	0.12 ^b	0.14 ^a	0.07	0.12 ^b
	2.63	2.07	2.25	2.78	1.17	2.04
Add-ons (1/0)	0.03	0.00	0.03	0.02	0.10	-0.07
	0.43	-0.01	0.39	0.22	1.05	-0.68
Time trend	-0.03	0.01	-0.01	-0.05 ^a	-0.03	-0.02
	-1.33	0.41	-0.47	-2.60	-1.54	-0.85
GP ownership	0.55 ^a	0.28	0.21	0.42 ^c	0.06	-0.07
	2.96	1.29	0.83	1.91	0.22	-0.26
GP going public	0.14	0.23 ^b	0.23 ^b	0.17		
	1.19	2.26	2.39	1.47		
Monitoring fees (% of EBITDA) of previous GP's LBOs		0.44 ^a	0.46 ^a			
		8.11	7.22			
GP lacks reputation			0.14			
			1.29			
GP age				-0.01 ^c		
				-1.95		
Founding partners have a graduate degree (%)					0.21	
					1.27	
Founding partners have a consulting background (%)					0.03	
					0.18	
Founding partners have an I-banking background (%)					0.10	
					0.68	
GP fund age						0.05
						1.45
Amount raised pre LBO by GP						0.00
						0.02
GP fund performance						0.11
						0.84
Pre LBO GP performance						-0.13
						-0.67
Pre LBO GP performance volatility						0.52 ^b
						2.27
Maximum rebate rate for funds of that vintage and size						-0.15
						-0.41
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.11	0.20	0.20	0.11	0.12	0.15
N_obs	1044	669	561	832	595	451

Table 7: Flow-fee sensitivity around date of LBO inception

This table shows results from OLS regressions. 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. 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.

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>
Total 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
N_obs	761	761	681

Table 8: Flow-fee sensitivity around the Global Financial Crisis

This table shows results from OLS regressions. The dependent variable is the increase in capital raised over 1999-2008 and capital raised over 2009-2015. GFC stands for Global Financial Crisis of 2008. 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.

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

Table 9: Current GP fundraising situation and portfolio company fees charged

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%), 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 million 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 (latest Fund)
ABRY Partners	Stable	Fund VIII raised \$1.9b, oversubscribed. Fund VII raised \$1.6b in 2011	6 months
Advent International Corp	Large Increase	Raising Fund VIII, target of \$12b. Fund VII raised \$10.8b in 2011, oversubscribed. Fund VI raised \$10.4b 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 Corporation	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 Partners	Large Increase	Fund XI raised \$3.7b in 2014, oversubscribed. Fund X raised \$1.3b in 2012	4 months
Walnut Investment Partners	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	N_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 10: 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. 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	N 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	NaN	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
All	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
R-square	16	15	15	16	15	21
Number of observations	285	285	285	285	285	285

Appendix Table 1: Contractual Rules for Monitoring Fees

This table gives the frequency of each provision in five different samples (all observations, LBOs made in 2000 and before, LBOs made in 2001 and after, small LBOs and large LBOs). LBOs with a TEV below \$500 million are classified as small and those above \$500 million are classified as large.

	All	Pre2000	Post2000	Small	Large
<i>Rules for the calculation of monitoring fees</i>					
Non-growing annuity	84.1	91.3	79.3	91.2	76.9
Growing annuity	3.5	0.6	5.6	0.4	6.7
1% of EBITDA	1.3	1.6	1.1	0.9	1.8
2% of EBITDA	1.3	0.6	1.9	0.9	1.8
Any % of sales	0.4	0.6	0.4	0.4	0.4
Greater of non-growing annuity and 1% of EBITDA	2.9	0.6	4.4	0.4	5.3
Greater of non-growing annuity and 2% of EBITDA	2.0	0.0	3.3	0.9	3.1
Greater of non-growing annuity and other % of EBITDA	0.7	0.6	0.7	0.0	1.3
Greater of a non-growing annuity and any % of Sales	3.1	4.4	2.2	4.0	2.2
Other	0.7	0.0	1.1	0.9	0.4
<i>Duration of the Management Service Agreements</i>					
Rolling	4.0	5.1	3.4	2.8	3.1
One or three years	2.4	3.3	1.8	3.2	1.6
Five years	21.2	34.8	13.5	29.4	13.2
Six or seven years	8.2	5.4	9.8	7.1	9.3
Ten years	50.6	46.7	52.8	50.8	50.4
Twelve years	10.2	2.2	14.7	2.4	17.8
Other duration	3.5	2.5	4.0	4.3	4.7
<i>Termination fees (a.k.a. accelerated monitoring fees) calculated as:</i>					
Present Value of outstanding fees under contract	25.5	1.1	38.0	3.9	45.1
Other termination fee rule	11.1	9.8	11.8	10.1	12.0
No termination fees to be paid	12.2	16.3	10.1	14.7	9.9
No explicit rule	51.3	72.8	40.2	71.3	33.1

Appendix Table 2: Imputed Fees

This table describes our observations by exit status and SEC coverage.

Status	SEC filling years		N_obs	Transaction fee	Monitoring fee	Amount imputed	Observations classified as 'complete'
	Early years	Late years					
Exited	Available	Available	371	5,590	4,586	0	Yes
Exited	Missing	Missing	47	527	62	435	No
Exited	Available	Only last year missing	36	1,135	733	0	Yes
Exited	Available	Missing	19	315	161	110	No
Exited	Only 1st year missing	Available	19	257	402	0	Yes
Exited	Available	Missing years during chap 11 protection	17	138	55	0	Yes
Exited	Missing	Available	13	164	77	29	No
Exited	Available	Missing years beyond MSA duration	8	66	57	0	Yes
Exited	Only 1st year missing	Only last year missing	3	140	123	0	Yes
Exited	Missing	Only last year missing	2	5	5	3	No
Not exited	Available	Only last year missing	20	783	756	0	No
Not exited	Available	Available	18	204	121	0	No
Not exited	Available	Missing	13	456	287	168	No
Not exited	Missing	Missing	3	38	0	19	No
Not exited	Available	Missing years beyond MSA duration	1	12	20	0	No
Not exited	Only 1st year missing	Available	1	70	21	0	No
Not exited	Only 1st year missing	Only last year missing	1	16	10	0	No
			592	9,916	7,476	765	

Appendix Table 3: Income streams of the ‘Big-4’

This table shows income stream for their 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. Total amounts are calculated between 2008 and 2014 when data is available.

	2007	2008	2009	2010	2011	2012	2013	2014	2008-2014
Apollo									
Fund management fees	149	245	261	259	263	277	285	315	1,905
Monitoring and transaction fees Gross	208	330	148	163	156	276	na	na	1,073
Fee offsets	-117	-209	-99	-101	-98	-154	na	na	-661
Monitoring and transaction fees Net	90	121	49	60	58	122	78	58	546
Carried interest	657	-845	311	1,322	-449	1,668	2,517	232	4,756
All fees	897	-479	621	1,641	-128	2,066	2,880	605	7,206
Blackstone									
Fund management fees	255	269	271	263	332	349	368	416	2,268
Monitoring and transaction fees Net	124	52	86	72	133	100	97	135	675
Carried interest	380	-430	338	309	71	258	728	1,977	3,251
All fees	759	-110	695	644	536	707	1,193	2,528	6,193
Carlyle									
Fund management fees	na	523	536	538	511	496	472	565	3,641
Monitoring fees net	na	14	16	15	31	18	23	18	135
Transaction fees net	na	20	12	22	35	19	21	51	180
Monitoring and transaction fees Net	na	34	28	36	66	37	44	69	314
Carried interest	na	-688	495	1,264	854	770	1,874	1,354	5,923
All fees	na	-132	1,059	1,838	1,431	1,303	2,389	1,988	9,876
KKR									
Fund management fees	258	396	415	396	430	424	460	453	2,974
Monitoring fees gross	70	97	158	87	164	117	120	135	878
Transaction fees gross	683	23	58	96	167	97	150	215	806
Fee offsets	-231	-13	-74	-53	-145	-97	-137	-199	-718
Monitoring and transaction fees Net	523	108	142	130	186	116	134	151	967
Carried interest	261	-1,160	746	605	139	684	794	777	2,585
All fees	1,042	-656	1,303	1,131	755	1,223	1,387	1,381	6,524

Appendix Table 4: Additional panels to Table 3

Same Table as Table 3, but using different dependent variables in each panel.

Panel A: Ratio of Monitoring Fees to EBITDA as Dependent Variable								
Total Enterprise Value (log)	0.30 ^c	0.29 ^c	0.14	0.01	0.38	0.26	0.29 ^c	0.28
	<i>1.82</i>	<i>1.67</i>	<i>0.74</i>	<i>0.06</i>	<i>1.61</i>	<i>1.44</i>	<i>1.76</i>	<i>1.59</i>
EBITDA (log)	-0.79 ^a	-0.81 ^a	-0.62 ^a	-0.53 ^a	-1.03 ^a	-0.78 ^a	-0.78 ^a	-0.86 ^a
	<i>-5.13</i>	<i>-5.24</i>	<i>-3.39</i>	<i>-2.96</i>	<i>-4.06</i>	<i>-3.97</i>	<i>-5.12</i>	<i>-5.12</i>
Total equity ownership by GPs	1.17 ^c	1.24 ^b	1.53 ^b	1.12	0.40	0.98	1.24 ^b	1.28 ^c
	<i>1.89</i>	<i>1.98</i>	<i>2.17</i>	<i>1.35</i>	<i>0.47</i>	<i>1.41</i>	<i>1.98</i>	<i>1.82</i>
Number of GPs invested in the focal LBO	0.31 ^a	0.30 ^b	0.31 ^a	0.31 ^a	0.28 ^b	0.36 ^a	0.31 ^a	0.32 ^b
	<i>2.73</i>	<i>2.53</i>	<i>3.05</i>	<i>3.13</i>	<i>2.14</i>	<i>2.97</i>	<i>2.74</i>	<i>2.50</i>
Bankrupted (1/0)	-0.58 ^b	-0.56 ^b	-0.24	-0.25	-0.75 ^a	-0.65 ^b	-0.61 ^b	-0.50 ^c
	<i>-2.30</i>	<i>-2.19</i>	<i>-0.77</i>	<i>-0.75</i>	<i>-2.67</i>	<i>-1.97</i>	<i>-2.36</i>	<i>-1.81</i>
IPO exited (1/0)	0.33 ^c	0.40 ^b	0.57 ^a	0.61 ^a	0.61 ^a	0.30	0.34 ^c	0.23
	<i>1.91</i>	<i>2.20</i>	<i>3.00</i>	<i>2.71</i>	<i>2.60</i>	<i>1.44</i>	<i>1.92</i>	<i>1.20</i>
Time trend	0.04	0.04	0.05 ^c	0.07 ^b	0.08 ^b	0.07 ^b	0.06 ^a	0.11 ^b
	<i>1.41</i>	<i>1.24</i>	<i>1.81</i>	<i>2.55</i>	<i>2.46</i>	<i>2.26</i>	<i>2.64</i>	<i>2.31</i>
Add-ons (1/0)	0.07	0.06	-0.03	-0.03	-0.18	0.07	0.06	-0.05
	<i>0.41</i>	<i>0.36</i>	<i>-0.14</i>	<i>-0.13</i>	<i>-0.89</i>	<i>0.40</i>	<i>0.38</i>	<i>-0.29</i>
Credit spread	0.80	0.95 ^c	0.84 ^c	0.70 ^c	0.42	0.90		
	<i>1.64</i>	<i>1.91</i>	<i>1.83</i>	<i>1.65</i>	<i>0.61</i>	<i>1.44</i>		
Leverage (*100)		0.01						
		<i>1.53</i>						
LBO debt to LTM EBITDA			0.06 ^b	0.08 ^c				
			<i>2.53</i>	<i>1.76</i>				
EBITDA CAGR				0.31				
				<i>0.72</i>				
LBO TEV to LTM EBITDA				0.00				
				<i>-0.11</i>				
Volatility of EBITDA over Total Asset (*10)					0.48			
					<i>0.96</i>			
Total EBT is negative (1/0)					0.25			
					<i>1.11</i>			
Holding period					-0.01			
					<i>-0.28</i>			
Estimated GPs return on equity						-0.08		
						<i>-0.46</i>		
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	No	No	No	No	No	No	No	No
Adjusted R-squared	0.12	0.11	0.14	0.15	0.17	0.15	0.11	0.14
N_obs	592	581	481	431	410	451	592	592

Panel B: Ratio of Transaction Fees to TEV as Dependent Variable

Total Enterprise Value (log)	-0.12 ^b	-0.11 ^c	-0.16 ^b	-0.13 ^b	-0.19 ^a	-0.08	-0.12 ^b	-0.12 ^c
	-2.00	-1.89	-2.48	-2.16	-2.74	-1.53	-2.00	-1.84
EBITDA (log)	0.15 ^a	0.14 ^a	0.15 ^a	0.10 ^c	0.21 ^a	0.17 ^a	0.15 ^a	0.16 ^a
	2.85	2.73	2.73	1.81	2.76	3.48	2.86	2.78
Total equity ownership by GPs	0.30	0.32 ^c	0.24	0.35	0.39	0.21	0.30	0.36 ^c
	1.60	1.67	1.15	1.61	1.61	1.02	1.57	1.80
Number of GPs invested in the focal	0.06 ^c	0.05	0.08 ^a	0.08 ^b	0.06 ^c	0.06 ^c	0.06 ^c	0.06 ^c
	1.80	1.62	2.59	2.48	1.78	1.77	1.80	1.80
Bankrupted (1/0)	-0.05	-0.04	0.04	0.07	0.08	0.04	-0.05	-0.03
	-0.56	-0.45	0.42	0.74	0.82	0.37	-0.54	-0.33
IPO exited (1/0)	0.05	0.05	0.08	0.08	0.13	0.14	0.05	0.03
	0.75	0.76	1.23	1.14	1.58	1.55	0.74	0.48
Time trend	0.01	0.00	0.01	0.01	0.00	0.01	0.00	-0.01
	0.69	0.50	1.49	1.37	0.35	0.64	0.62	-0.68
Add-ons (1/0)	0.18 ^a	0.16 ^b	0.09	0.07	0.14 ^b	0.24 ^a	0.18 ^a	0.14 ^c
	2.94	2.45	1.33	0.99	2.13	3.71	2.94	1.87
Credit spread	-0.05	-0.01	-0.07	-0.10	-0.21	0.00		
	-0.36	-0.09	-0.45	-0.67	-1.08	-0.02		
Leverage (*100)		0.00						
		1.00						
LBO debt to LTM EBITDA			0.00	0.02				
			-0.50	1.12				
EBITDA CAGR				0.06				
				0.43				
LBO TEV to LTM EBITDA				-0.03 ^b				
				-2.21				
Volatility of EBITDA over Total Asset					0.18 ^c			
					1.71			
Total EBT is negative (1/0)					0.10			
					1.26			
Holding period					-0.04 ^b			
					-2.41			
Estimated GPs return on equity						-0.01		
						-0.14		
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	No	No	No	No	No	No	No	No
Adjusted R-squared	0.05	0.05	0.06	0.05	0.05	0.07	0.05	0.03
N_obs	592	581	481	431	410	451	592	592

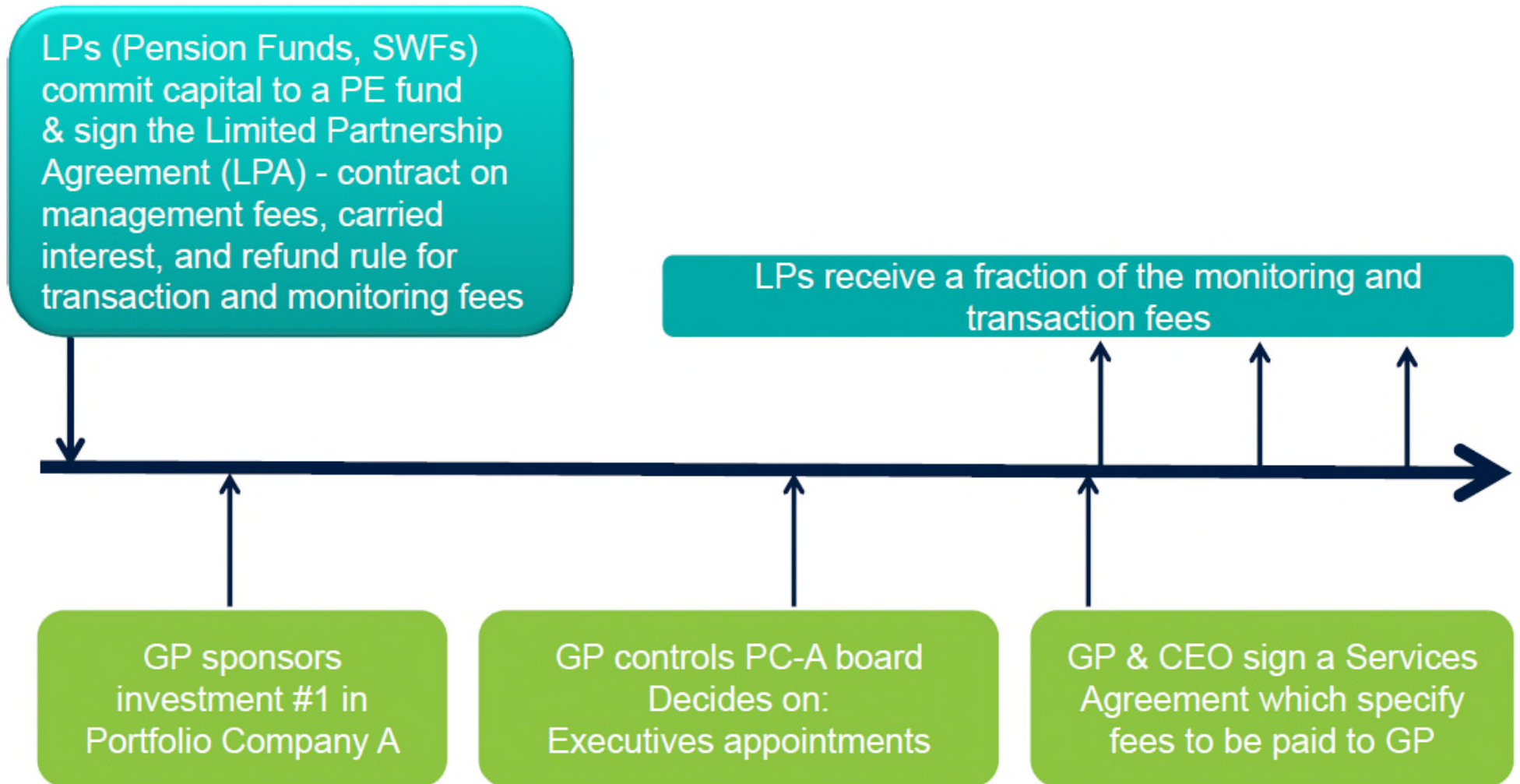
Panel C: Ratio of Monitoring Fees to Equity as Dependent Variable

Total Enterprise Value (log)	-2.98 ^a	-3.04 ^a	-3.18 ^a	-3.12 ^a	-3.09 ^a	-3.03 ^a	-2.99 ^a	-3.31 ^a
	-9.09	-9.27	-7.91	-7.56	-6.55	-8.17	-9.09	-9.87
EBITDA (log)	2.64 ^a	2.30 ^a	2.89 ^a	2.64 ^a	2.44 ^a	2.78 ^a	2.65 ^a	2.65 ^a
	8.71	7.98	7.88	6.93	4.68	7.80	8.75	8.31
Total equity ownership by GPs	-2.82 ^c	-3.30 ^b	-3.35 ^c	-4.81 ^b	-4.91 ^b	-3.31 ^c	-2.74 ^c	-2.19
	-1.71	-2.17	-1.86	-2.37	-2.22	-1.87	-1.66	-1.14
Number of GPs invested in the focal	0.21	0.19	0.34	0.32	0.29	0.34	0.21	0.25
	0.90	0.80	1.63	1.46	0.99	1.26	0.90	0.93
Bankrupted (1/0)	-0.33	-0.78	-0.11	-0.14	-0.65	-0.20	-0.36	0.02
	-0.57	-1.42	-0.19	-0.20	-0.93	-0.27	-0.62	0.03
IPO exited (1/0)	0.46	0.80 ^a	0.66 ^c	0.91 ^b	1.20 ^a	0.25	0.46	0.44
	1.48	2.67	1.82	2.09	3.01	0.55	1.48	1.20
Time trend	0.04	0.09 ^c	0.11 ^c	0.15 ^b	0.12 ^c	0.08	0.07	0.17 ^c
	0.65	1.73	1.96	2.30	1.78	1.22	1.52	1.67
Add-ons (1/0)	0.04	-0.03	0.07	-0.06	-0.28	-0.19	0.03	-0.14
	0.11	-0.09	0.18	-0.13	-0.61	-0.50	0.09	-0.34
Credit spread	1.17	1.77 ^c	0.45	0.40	0.78	0.57		
	1.20	1.86	0.55	0.50	0.65	0.57		
Leverage (*100)		0.10 ^a						
		8.12						
LBO debt to LTM EBITDA			0.09 ^c	0.33 ^c				
			1.68	1.94				
EBITDA CAGR				-0.87				
				-1.61				
LBO TEV to LTM EBITDA				-0.26 ^b				
				-2.14				
Volatility of EBITDA over Total Asset					2.39 ^b			
					2.17			
Total EBT is negative (1/0)					0.60			
					1.01			
Holding period					0.08			
					0.72			
Estimated GPs return on equity						-0.11		
						-0.22		
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	No	No	No	No	No	No	No	No
Adjusted R-squared	0.05	0.05	0.06	0.05	0.05	0.07	0.05	0.03
N_obs	592	581	481	431	410	451	592	592

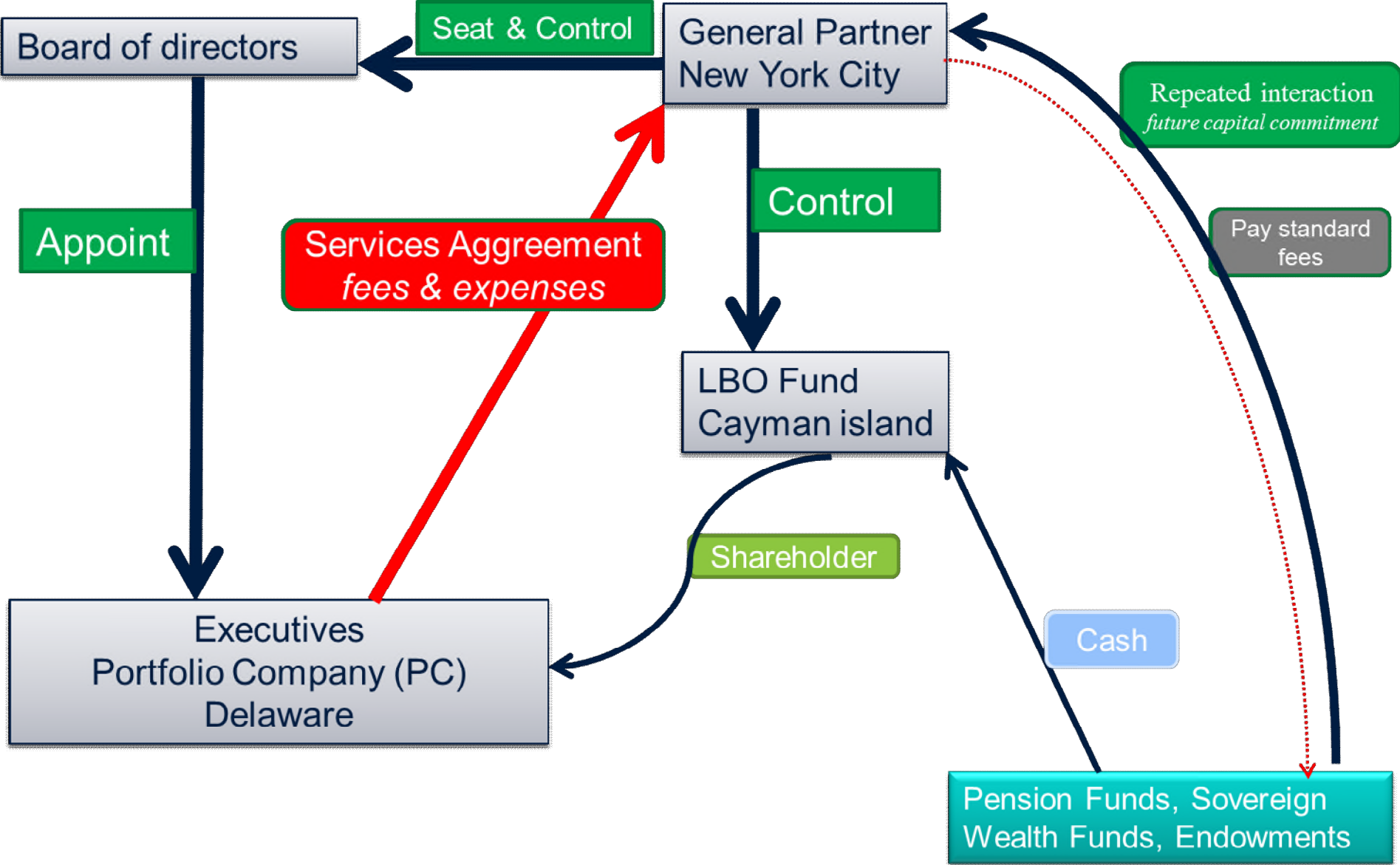
Panel D: Ratio of Transaction Fees to Equity as Dependent Variable

Total Enterprise Value (log)	-0.22	-0.29	-0.62 ^b	-0.34	-0.69 ^b	-0.15	-0.21	-0.30
	-0.93	-1.22	-2.41	-1.38	-2.04	-0.55	-0.87	-1.15
EBITDA (log)	0.91 ^a	0.57 ^a	1.08 ^a	0.64 ^a	1.32 ^a	1.08 ^a	0.90 ^a	0.89 ^a
	4.05	2.81	4.51	2.64	3.43	4.46	4.03	3.74
Total equity ownership by GPs	-2.67 ^a	-3.15 ^a	-2.82 ^b	-2.87 ^b	-3.36 ^b	-3.12 ^a	-2.73 ^a	-2.52 ^b
	-2.81	-3.38	-2.55	-2.33	-2.46	-3.19	-2.82	-2.49
Number of GPs invested in the focal	0.12	0.10	0.29 ^b	0.26 ^c	0.15	0.08	0.12	0.17
	0.83	0.67	2.09	1.88	1.01	0.52	0.83	1.06
Bankrupted (1/0)	0.57	0.13	0.95 ^b	1.09 ^a	1.29 ^a	0.71	0.59	0.76 ^c
	1.54	0.39	2.44	2.64	2.91	1.48	1.62	1.91
IPO exited (1/0)	-0.08	0.26	0.28	0.35	0.11	0.38	-0.08	0.05
	-0.28	1.06	0.96	1.19	0.32	0.99	-0.29	0.16
Time trend	-0.08 ^b	-0.03	0.00	0.00	-0.08 ^b	-0.08 ^c	-0.10 ^a	-0.18 ^a
	-2.21	-0.73	-0.05	0.13	-2.41	-1.89	-3.18	-3.33
Add-ons (1/0)	0.59 ^b	0.51 ^b	0.42	0.21	0.58 ^c	0.71 ^b	0.59 ^b	0.51
	2.01	2.08	1.28	0.65	1.69	2.37	2.00	1.45
Credit spread	-0.78	-0.18	-1.29 ^b	-1.45 ^a	-1.54 ^a	-1.18 ^c		
	-1.61	-0.35	-2.49	-2.72	-2.83	-1.74		
Leverage (*100)		0.09 ^a						
		11.11						
LBO debt to LTM EBITDA			0.03	0.28				
			0.89	1.62				
EBITDA CAGR				-0.40				
				-0.80				
LBO TEV to LTM EBITDA				-0.33 ^a				
				-2.75				
Volatility of EBITDA over Total Asset					0.48			
					0.79			
Total EBT is negative (1/0)					0.46			
					1.12			
Holding period					-0.19 ^b			
					-2.42			
Estimated GPs return on equity						-0.35		
						-1.12		
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter of LBO inception Fixed Effects	No	No	No	No	No	No	No	No
Adjusted R-squared	0.09	0.28	0.09	0.14	0.12	0.12	0.09	0.09
N_obs	581	581	481	431	403	444	581	581

Appendix Figure 1: The timeline



Appendix Figure 2: The private equity model



Appendix Figure 3: Google Trend Search for MSAs

