Preliminary.

What Do Private Equity Firms Say They Do?

Paul Gompers*, Steven N. Kaplan** and Vladimir Mukharlyamov***

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Abstract

We survey 79 private equity (buyout) investors with a total of over $750 billion of assets under management about their practices in firm valuation, capital structure, governance and value creation. Few investors use discounted cash flow or present value techniques to evaluate investments. Rather, they rely on internal rates of return and multiples of invested capital. They also use comparable company multiples to calculate exit values rather than discounted cash flow valuations. Private equity investors typically target a 25% internal rate of return on their investments. They also report that their limited partner investors focus more on absolute, not relative performance. Capital structure choice is based equally on optimal trade-off and market timing considerations. Private equity investors anticipate improving the performance of the companies in which they invest, with a greater focus on increasing growth than on reducing costs. They devote meaningful firm resources to do this. We also explore how the actions that private equity managers say they take group into specific firm strategies and how those strategies are related to firm founder characteristics.

* Harvard Business School and NBER, ** University of Chicago Booth School of Business and NBER, and *** Harvard University. This research has been supported by the Division of Research at the Harvard Business School (Gompers) and the Fama-Miller Center (Kaplan). We thank Brad Cornell, Harry DeAngelo, David Robinson and seminar participants at the American Finance Association, Harvard Business School Accounting and Control workshop, Harvard Business School Finance workshop, Hebrew University, London Business School, Stanford, the University of North Carolina and the Wharton School for helpful comments. Gompers and Kaplan have consulted to private equity general partners and limited partners. The authors' e-mail addresses are pgompers@hbs.edu, skaplan@uchicago.edu, and mukharly@fas.harvard.edu.

1. Introduction

The private equity (buyout)[1] industry has grown markedly in the last twenty years and academic research has increasingly focused on the effects of private equity. What has been less explored are the specific analyses and actions taken by private equity (PE) fund managers. This paper seeks to fill that gap. In a survey of 79 private equity firms managing more than $750 billion in capital, we provide granular information on PE managers' practices in determining capital structure, valuing transactions, sourcing deals, governance and operational engineering. We also explore how the actions that private equity managers say they take group into specific firm strategies and how those strategies are related to firm founder characteristics.

Recent academic research has provided accumulating evidence that private equity investors have performed well relative to reasonable benchmarks. At the private equity fund level, Harris, Jenkinson and Kaplan (2014), Higson and Stucke (2013), Robinson and Sensoy (2013) and Ang et al. (2013) all find that private equity funds have outperformed public equity markets net of fees over the last three decades. The outperformance versus the S&P 500 in Harris et al. is on the order of 20% over the life of a fund and roughly 4% per year. Consistent with that net of fee performance, Axelson, Sorensen and Stromberg (2013) find outperformance of over 8% per year gross of fees.

At the private equity portfolio company level, Davis et al. (2013) find significant increases in productivity in a large sample of U.S. buyouts from the 1980s to early 2000s. Cohn and Towery (2013) find significant increases in operating performance in a large sample of U.S. buyouts of private firms. Kaplan (1989) finds significant increases in public to private deals in the 1980s. Cohn et al. (2013) and Guo et al. (2011) find modest increases in operating performance for public to private buyouts in the 1990s and early 2000s, although Guo et al. find large increases in company values.

From Gompers and Lerner (1999), Metrick and Yasuda (2010), and Chung et al. (2012), we also know that the compensation of the partners at the private equity funds creates strong incentives to

[1] We classify private equity as buyout or growth equity investments in mature companies. Private equity as we define it in this paper is distinct from and does not include venture capital investments.

performance after firms undergo a leveraged buyout. Stromberg and Kaplan (2009) summarize subsequent research that largely confirms that private equity investments are associated with improvements in operating performance or productivity. While little research has identified the key operating levers that private equity managers pull to improve performance, several papers have examined the effects of private equity on the operational performance of the companies they own. More recently, Davis et al. (2014) use U.S. Census data to study a large sample of U.S. buyouts and finds that they are associated with an improvement in productivity. Cohn and Towery (2013) use income tax data to study a large sample of U.S. buyouts and find improvements in operating margins. The exception to these positive results are public to private transactions. Cohn et al. (2013) and Guo et al. (2011) find modest, but insignificant increases in operating margins in U.S. public to private transactions.

In doing these analyses, we view this paper as a complement to the survey papers of Graham and Harvey, beginning with Graham and Harvey (2001).[2] Graham and Harvey survey chief financial officers to understand how they make capital budgeting, capital structure and other decisions. They compare their survey findings of practice to the recommendations or insights from different academic theories. In this paper, we do the same. We view this survey as particularly interesting because private equity investors have been so successful (both in terms of generating attractive returns for investors and compensation for their managers), have strong incentives to maximize shareholder value, and, because of those incentives and compensation, very likely attract talented individuals. As we show below, it also is the case that a large percentage of private equity investors have been trained at prominent business schools. In recent years, positions in private equity firms have been among the most coveted for graduating MBA students. A Pitchbook 2013 survey showed that a small number of elite business schools accounted for the vast majority of new hires in private equity. As such, we would expect that private equity investors' practices would approximate what financial economists believe is theoretically (and empirically) value maximizing.

[2] See also Brav et al. (2005) and Graham et al. (2005).

Finally, our paper is complementary to a recent survey by DaRin and Phalippou (2014) who survey a large sample of PE limited partners. Their survey includes questions on the criteria PE limited partners use in choosing PE investments. Darin and Phallippou (2014), however, have relatively little to say about the internal decision-making and strategies of the general partner.

3. Sample and Design

a. Design

We created the survey to determine what PE investors say that they do. We also attempted to design the survey with the intent of comparing what those investors do relative to what is taught at business schools. We initially tested the survey on three PE investors in the summer of 2011. We revised the survey to reflect some ambiguities in our questions and to add some additional questions. The final survey includes 92 questions and is available on the internet at Paul Gompers' website.

b. Delivery and Response

We began to distribute the survey to PE investors in the fall of 2011. We distributed it to investors where one of the co-authors knew or was introduced to a senior investment professional. We continued to identify potential PE investors in 2012. We received our last survey response in the winter of 2013. The vast majority of survey responses, therefore, were received in 2012.

We contacted a total of 136 PE firms. We sent survey links to 106 of these who expressed an interest in the survey. Of these, 79 filled out some part of the survey and 64 completely filled out the survey. The response rate of roughly 50% is much higher than the response rate for other surveys. Graham and Harvey (2001) obtain a response rate of 8.9% for CFOs while DaRin and Phalippou (2014) obtain a response rate of 13.8% for PE limited partners.

c. Private Equity Firm Characteristics

Table 1 provides some summary statistics for the firms of the PE investors who responded to the survey. We obtained assets under management (AUM), performance of the most recent primary fund (if available), and age of each private equity firm in the sample as of December 2012 from Preqin. Information on firms not covered by Preqin is taken from firm websites and media articles.

The table shows that there is a large variation in the size of the firms as measured by assets under management (AUM). The mean AUM is just under $10 billion. A quarter of the firms have AUM under $750 M while a quarter have AUM above $11 billion.

Our overall sample of 79 firms includes firms with a total of over $750 billion in AUM. Our sample of 64 firms that completed the entire survey includes firms with a total of over $600 billion in AUM. In particular, we have solid coverage of the largest PE firms. Each year, Private Equity International (PEI) Media ranks the top PE firms globally by AUM. Our (fully completed) sample includes eleven of the top twenty-five in PEI's 2012 list. Given this, our results are reflective of a meaningful fraction of the PE industry.

The table also indicates that Preqin has performance data for the most recent fund for 58 of the sample PE firms. The average fund in the sample has an IRR that is 2.7% above Preqin's benchmark IRR for the same vintage year. The median fund is 0.9% above. This suggests that our sample is largely representative of the PE fund universe, at least in terms of performance. If anything, we may have a small bias towards better performers. We do not believe any bias towards slightly better performing PE firms would influence our results in any way. If anything, our sample of firms would be expected to employ better practices than other PE firms and as such their actions should conform more closely to what finance research and courses prescribe.

Despite the apparent representativeness of the sample and the relatively high response rate, we recognize that the sample is potentially selected. This is unavoidable given our requirement that we have an introduction to a senior person and given that PE firms have limited disclosure requirements. Given the large total AUM our sample PE firms control, the survey represents a meaningful fraction of the PE industry.

Table 2 presents the distribution of enterprise values of the portfolio companies in which the PE firms invest. The sample has good representation of many different PE firm enterprise values and covers the broad spectrum of PE investing. The table suggests that almost one-sixth of portfolio company investments by the sample PE firms have enterprise values exceeding $1 billion while almost 12% have enterprise values below $25 million.

Table 3 confirms that the private equity investors in our sample are primarily buyout and growth equity investors, not venture capital investors. Over 90% of the PE investors invest in buyouts while almost 75% invest in growth equity. These add up to more than one because many PE investors invest in both buyouts and growth equity. A minority of the sample investors, particularly the older and larger ones, also invest in distressed investments and PIPEs (private investments in public equities).

Finally, consistent with our survey delivery method, table 4 indicates that over three quarters of the surveys were completed by a senior PE executive – one with the title general partner, managing partner or managing director. As such, we feel that the responses are very likely indicative of firm practices employed within the PE organizations broadly.

We also used the PE firm websites to collect the names and educations of all of the partner level executives at our sample PE firms. We used the titles partner, managing partner, managing director, senior managing director, founder, CEO, chairman, head, and principal. We identified 767 such individuals. Of these, almost two-thirds either have an MBA or a JD – 435 or 57% of these have an MBA while 54 or 7% have a law degree. Of those with an MBA, 167 (38%) are from Harvard, 52 are from Chicago Booth (12%), 39 are from Stanford (9%), 32 are from Wharton (7%) and 23 (5%) are from Columbia. These figures indicate that the top executives at these firms are highly educated and a very large fraction of them have degrees from what would be considered the top graduate schools. Once again, we believe that given the educational background of the sample, our PE firms would likely employ

industry best practices in their investment process. At the same time, it is possible that we have oversampled Harvard and Chicago alums while undersampling Wharton alums.[3]

4. Financial Engineering

a. Valuation / Capital Budgeting.

In this section, we consider how PE investors value the companies in which they invest or, equivalently, evaluate the attractiveness of those investments. A substantial corporate finance literature has developed around capital budgeting. Firms decide which projects to undertake based upon a variety of investment rules. Much of the early finance research established that optimal decision making for firms should be based on net present value analyses.[4] Finance theory is clear that estimating expected future cash flows from an investment, then using a discount rate that is derived from an explicit asset pricing model (e.g., CAPM or Fama-French three factor model) leads to better investment decisions when compared to alternatives like internal rate of return (IRR) or payback analysis (e.g., multiple on invested capital (MOIC).) The theory, therefore, predicts or suggests that private equity investors should be more likely to use discounted cash flow methods. Our results allow us to compare how investment decision-making criteria at PE firms compares to the framework articulated by finance theory.

i. Valuation / Evaluation Methods

The survey asks the PE investors to identify different methods they use to evaluate the overall attractiveness of a deal. We asked two different questions. First, we asked which metrics they use, giving them the choice of gross internal rate of return (IRR), multiple of invested capital (MOIC), adjusted present value (APV) discounted cash flow (DCF), weighted average costs of capital (WACC) DCF, comparable company EBITDA multiples and free cash flow return to equity. Table 5a reports the results.

[3] The Pitchbook database finds that HBS alums make up 26%; Wharton alums, 11%; and Chicago alums, 7% of all PE fimr professionals. "Harvard, 4 Other Schools, Make Up Most MBAs at PE & VC Firms," http://blog.pitchbook.com/harvard-4-other-schools-make-up-most-mbas-at-pe-vc-firms/

[4] For example, see Brealey, Myers and Allen (2011).

The vast majority of the PE investors rely on gross IRR and MOIC. Over 70% also incorporate comparable company multiples. In contrast, relatively few PE investors use DCF methods. In sum, fewer than 20% use APV or WACC-based DCF methods to evaluate investments. Second, we also asked the PE investors to rank their reliance on the different methods. Again, as Table 5b indicates, IRR (in particular) and multiple approaches are the overwhelming favorites while net and adjusted present value approaches lag far behind.

We also directly asked private equity managers how they calculate their WACC. Only eighteen (or 27%) of the PE investors describe performing a calculation that can be generously considered to approximate a traditional, CAPM-based approach. At the same time, 27 said they did not use WACC and another 10 said "not applicable," indicating, that they, too, do not use WACC. Overall, then, at least 55% of the PE investors appear not to use WACC at all.

These results indicate that PE investors do not frequently use net present value or DCF techniques. This contrasts markedly with the results in Graham and Harvey (2001) for CFOs. In that paper, they find that CFOs rely on net present value techniques roughly as frequently as IRR; and large company CFOs, in particular, rely heavily on the CAPM to determine their cost of capital. Our results for PE investors also contrast with the methods taught in MBA finance courses at all top business schools as well as typical valuation analyses seen in investment banker fairness opinions for mergers and acquisitions. CAPM-based discounted cash flow analyses are the primary method taught and used in those settings. It also is clear that in their IRR calculation, the PE investors evaluate cash flows to leveraged equity. Arguably, this, too, contrasts with the usual academic advice in MBA finance courses to evaluate and discount cash flows to an all-equity firm.

ii. Years of Forecasts

In evaluating any investment, investors typically forecast the cash flows of that investment over some period of time. We asked the PE investors to tell us the time horizon of the investment cash flows they evaluate. Figure 1 indicates that the great majority of PE investors – almost 96% of our sample – use

a five year forecast horizon. At the end of the five years, they typically calculate a terminal or exit value. This indicates that PE investors do not find it productive or valuable to forecast cash flows for more than five years.

Graham and Harvey (2001) do not appear to have asked this question so we cannot compare our results to theirs. While we did not explicitly ask why PE firms use five years as the predominant forecasting horizon, most PE firms expect to hold their investments for approximately five years. As such, forecasting cash flows over five years approximates the PE firm's time horizon. Several investors have told us that using a standard time period, like five years, allows the PE firms to compare different investments on an equal footing. That, of course, explains why each firm would use a standard horizon, but not why almost all firms would use the same five-year horizon.

iii. Discount of Management Forecasts?

When PE investors evaluate an investment, they usually begin with a set of management forecasts. It seems natural to assume that the PE investors might view those forecasts as optimistic. Accordingly, we asked the PE investors whether they typically adjusted management's forecasts. We asked them to measure this as a fraction of EBITDA – earnings before interest, taxes, depreciation and amortization – a measure of pre-tax cash flow.

Table 6 shows that it is, indeed, typical for PE investors to discount management forecasts. For the 44 PE investors who answered this question explicitly, the median and average discount is 20%. Another 11of the PE investors who did not provide a number indicated that the discount varied with the circumstances of individual deals.

iv. Exit Value or Terminal Value

In order to evaluate the economics of an investment, the PE investors need to estimate a value for their investment (or, equivalently the portfolio company) at the expected time of exit. As noted above, this is virtually always five years into the investment. There are (at least) three possible ways to do this

valuation: (1) using the (discounted) value of a growing perpetuity of the final year cash flow in a CAPM-framework; (2) using the value of comparable or similar public companies; and (3) using the value of acquisitions or transactions involving comparable or similar companies.

Table 7a indicates that PE investors are much more likely to use comparable methods – both publicly traded companies and transactions – than discounted cash flow methods. Fewer than 30% of the PE investors use a growing perpetuity methodology. The percentage increases for larger PE investors, but remains below 35%. The other category is dominated by eleven firms (or 16%) who indicate that they use the entry multiple – the EBITDA multiple the PE investor paid for the company – to calculate the exit multiple.

Table 7b explores how the PE investors choose the comparable companies they use. Industry and firm size are the most important criteria they match on with growth, margins and geography next in importance. Setting the exit multiple equal to the entry multiple also is consistent with matching on firm industry and size. Firm riskiness ranks seventh among the different criteria. Again, PE investors appear to be skeptical of using measures of risk that have strong foundations in academic finance.

v. IRR and MOIC Targets

As the previous sections indicate, PE investors do not explicitly use DCF / CAPM-based methods. Given their emphasis on IRR and MOIC, however, it is important to know what IRR and MOIC PE investors target and whether those targets bear any relation to CAPM-related returns.

v.i. IRR Targets

Table 8a indicates that PE investors (say) they target median IRRs of 25%. Smaller PE firms and those with global investment operations tend to target higher IRRs. A rough calculation suggests that this target exceeds a CAPM-based rate. In 2012, long-term Treasury bond rates did not exceed 4%. Axelson, Sorensen and Stromberg (2013) estimate an average portfolio company equity beta of 2.3. Assuming an equity risk premium of 6%, these suggest a CAPM-based discount rate of less than 18%.

The fact that PE investors target returns exceed CAPM-based returns is not surprising. PE investors pay their fees out of gross IRRs. PE limited partners (LPs) receive their returns net of those fees. In other words, in order to generate a competitive CAPM-based return net of fees, PE investors must target a greater return gross of fees. Similarly, many PE firms argue that they generate returns in excess of the underlying riskiness of the portfolio. In order to earn positive excess returns, the PE firms would need to target returns that are higher than the return implied by the CAPM risk of the investment.

We also asked two different questions to determine whether PE investors adjusted their target IRR to reflect different risks in different deals. These are presented in tables 8b and 8c. Table 8b indicates that over 85% of PE investors adjust their target IRRs for firm riskiness. While most PE investors explicitly do not use a CAPM-based approach, this adjustment is potentially somewhat consistent with one. Unfortunately, the survey did not explicitly define firm risk. As a result, we cannot distinguish the extent to which firm risk refers to systematic or unsystematic risk.

At the same time, table 8b indicates that fewer than half of the PE investors adjust their target IRRs for deal leverage. This suggests that the more than half of the PE investors who do not make such an adjustment explicitly do not take a CAPM-based approach.

Table 8c reports the fraction of deals that PE investors adjust cash flows or the IRR to reflect different risks. These risks can be divided into macroeconomic or systematic risks (unexpected inflation, interest rate, term structure, business cycle, and foreign exchange) and firm-specific risks (distress, size, market-to-book, momentum and illiquidity). The results indicate that PE investors are somewhat sensitive to macroeconomic risks, particularly GDP or business cycle risk where PE investors make some adjustment in roughly half of their deals. This is consistent with PE investors taking market or equity risk into account. This is also is suggestive of PE investors having time varying hurdle rates. Firm-specific adjustments appear less important, although there are a variety of firm-specific factors that at least some of the PE firms use to adjust their target hurdle rates.

v.ii. MOIC Targets

Table 9 indicates that PE investors (say) they target median MOICs of 2.5 times their investment. At a five-year time horizon, this implies a gross IRR of approximately 20%. The mean MOIC of 2.85 times implies a gross IRR of 23%. The MOIC targets, therefore, imply slightly lower gross IRRs than reported gross IRR targets. Smaller and younger private equity firms generally tend to have higher MOIC targets.

vi. Net of Fee Targets (Marketed to LPs)

The previous sections describe the targets private equity investors use to evaluate their investments. We also asked them how their limited partners (LPs) evaluate the performance of the private equity investors. Benchmarking of private equity returns has seen significant evolution in recent years both from an academic and from a data vendor perspective.

Table 10 reports the benchmark that the PE investors report is most important for their LPs. Surprisingly, almost two-thirds of the PE investors report that an absolute measure of performance – net IRR and net MOIC – is most important. In fewer than 8% of the cases do the PE investors believe that LPs view performance relative to public markets as the most important performance benchmark. This is surprising given the large attention paid to alphas and relative performance in public market investments like mutual funds and hedge funds. An additional 27% believe the performance relative to other PE investors is most important. The only difference among private equity firms appears to be that older private equity firms' investors evaluate net IRR relative to fund vintage year more frequently and younger private equity firms' investors look to cash-on-cash multiples. Overall, the focus on absolute performance is notable and surprising given the intense focus on relative performance or alphas for public market investments.

Table 11 reports the net IRR that the PE investors market to their LPs. The median net IRR is between 20% and 25%. Consistent with the PE investors' gross IRR targets, this would correspond to a gross IRR of between 25% and 30%. And as with the gross IRR targets, these net IRR targets seem to exceed what one would expect in a CAPM-based framework.

vii. Discussion

These somewhat surprising valuation results raise several potential alternative explanations. First, it is possible that because private equity is viewed by many limited partners (and marketed as such by some general partners) as an absolute return investment, nominal hurdle rates are more meaningful than discounted cash flow valuation based upon CAPM discount rates. Because underlying portfolio companies were typically only periodically revalued (if at all), private equity fund returns are not risk-adjusted by limited partners in a traditional sense. Alternatively, private equity investors may be skeptical of asset pricing models that seek to measure risk. As such, far more of their energy is focused on estimating reasonable cash flows.

Our analysis of the factors that affect private equity firm hurdle rates also indicates a deviation from what is typically recommended in finance research and teaching. It suggests that while PE investors do not use a CAPM-based framework, they do use what appears to be an ad-hoc multi-factor framework. Some of the underlying ad hoc factors appear related to systematic risk and others relate to non-systematic risk, i.e., it appears that many private equity firms care about the total risk of the investment when determining the hurdle rates. This would be consistent with the lack of risk-adjusting investment returns on the part of limited partners. If that is the case, then private equity managers would care about adjusting the hurdle rates for both types of risk. Similarly, the diversity of criteria factored into a PE firm's gross IRR target means that unlike a CAPM-based discount rate which would be the same across different private equity firms, PE firm hurdle rates are likely to vary significantly for similar investments and are likely to be PE firm, time period, and portfolio company specific.

Our results concerning exit multiples being based on comparable companies suggests that PE investors are somewhat skeptical of CAPM-based methods for valuing companies relative to the use of multiples-based approaches. This is at odds with methods taught in basic finance courses in which terminal / exit values are calculated using growing perpetuity formulas with comparable companies methods possibly used as a check on the CAPM-based approach.

The IRR analysis also embeds the "action plan" of the private equity firm. Typical holding periods for investments are centered around five years (the typical projection length) and exit values are determined by industry multiples (what they hope to sell the company for at exit.) As such, the effort put into the typical IRR model helps private equity firms manage their portfolio more than DCF does. In essence, the framework of investment evaluation may be tied to the investment fund structure that imposes limited holding periods and less transparency on underlying valuation movements, i.e., systematic risk.

b. Capital Structure:

i. Results

As Graham and Harvey (2001) among others note, it is a longstanding question in corporate finance as to whether firms have a target capital structure that is determined by a trade-off between the costs and benefits of taking on debt. Among the most taught factors that finance educators argue should influence optimal debt levels is the trade-off theory in which managers set debt levels to balance the tax of interest deductibility and disciplining of management with the expected costs of financial distress. The costs of distress include the inability to invest in valuable future projects, retain customers or retain employees because of cash constraints or questions about long-term viability. In their survey, Graham and Harvey find some support for the trade-off theory (as well as some support for pecking order theories). They also find that CFOs place their greatest focus on retaining financial flexibility and a good credit rating.

AJSW (2013), contrast the trade-off theory of capital structure with a market-timing view. In their view, the trade-off theory implies that industry factors play an important role in optimal capital structure because industries vary in cash flow volatility – affecting the probability of distress and agency costs – as well as investment opportunities and tangibility – affecting the costs of distress. They argue that this implies that buyout firm leverage should be related to the leverage of public companies in the same industry. In the market timing view, in contrast, leverage and capital structure respond to economy-wide

debt market conditions. When interest rates are "low," firms tend to raise more debt. When equity prices are "high," firms raise capital by issuing more equity. For a large sample of buyouts, they do not find any support for the trade-off theories. Buyout capital structures are not related to capital structures of similar public companies. Instead, consistent with market-timing, leverage is highly related to economy-wide debt market conditions.

In our survey, we asked the PE investors how they determine the initial capital structure of their portfolio companies. We included both trade-off and market-timing related factors. Table 12 reports the typical capital structure that PE investors target at closing. They target a median debt-to-total capital of 60% and a median debt-to-EBITDA ratio of 4.0 times. Some observers will view these ratios as surprisingly low. They are much lower than the ratios that were common in the 1980s. They also are somewhat lower than the median ratios of 70% and 5.2 times, respectively, in AJSW(2013).

There are two likely reasons that explain why these survey ratios are lower. First, we conducted our survey in 2012, a year in which debt ratios and debt availability were lower than the historical average. Second, a number of the investors in our survey invest in growth equity as well as buyouts. As their name suggests, growth equity investments are likely to use less leverage than buyouts.

We also find that larger and older private equity investors tend to target more levered capital structures. This is perhaps not surprising given that larger private equity firms target investments in larger companies that can sustain greater leverage.

The survey asks what factors the PE investors consider in determining capital structure. The trade-off theories suggest a role for firm industry, tax benefits, default risk and the ability to generate operating improvements / reduce agency costs. The Tables 13a and 13b present the key results. Table 13a reports whether the PE investors consider a particular factor while table 13b reports the rankings of those factors. Both tables 13a and 13b suggest that the trade-off theory and market timing are equally important. Almost all of the PE investors consider both industry factors and current interest rates in determining capital structure. These two rank well above the others in importance. Roughly two-thirds of the PE investors explicitly think about the trade-off between tax benefits and default risk while the

same percentage also say they raise as much debt as the market will bear. These factors tie for third in importance. Just under 40% consider the ability of debt to force operational improvements in the manner suggested by Jensen (1989). Finally, only six firms, or less than 10%, mention financial flexibility as an important determinant of capital structure. This contrasts sharply with the strong emphasis on financial flexibility among CFOs in Graham and Harvey (2001).

ii. Discussion

Our market timing result is very consistent with the result in AJSW (2013). The finding that PE investors do consider trade-off related factors is not. The question is how can the PE investor and AJSW results be reconciled? One possible explanation is that it is very difficult for outside observers like AJSW to measure optimal capital structure. It is unlikely that all public companies in the same industry have the same optimal capital structure and it also is unlikely that all public companies are optimizing. In addition, the companies that PE investors select to invest in are likely to be those that were not optimizing and for whom there is room for improvement. Both of these factors will introduce noise into the tests conducted by AJSW.

The fact that most private equity firms do not consider financial flexibility when setting capital structure is potentially explained by the private equity firm's ability to inject capital in the future. Because most private equity firms "own" the company and have access to inside information, there is no asymmetric information that would create an equity financing constraint. The private equity firms typically have existing funds with undrawn capital and can always invest additional equity. In fact, we often see such follow-on equity investments in situations where portfolio companies make roll-up acquisitions. In these settings, the typical concern about financial flexibility that were identified in Graham and Harvey (2001) would be less of a concern.

Overall, then, the survey indicates that PE investors consider both trade-off theories and market timing. This is arguably favorable both to the traditional instruction at business schools and to the more recent advances in behavioral finance.

c. Incentives

Management incentives are supposedly an important piece of financial engineering. Table 14 is consistent with this. It confirms previous work by Kaplan (1989), Kaplan and Stromberg (2009) and Acharya et al. (2013) that PE investors provide strong incentives to portfolio company management. On average, PE investors allocate 17% of company equity to management and employees. The CEO obtains an average of 8%. The percentages are slightly lower, at 15% and 6%, respectively, for the larger PE investors who invest in larger companies. This is significantly higher than equity ownership of senior management in public companies. For example, Page (2011) finds that the average CEO of a public company between 1993 and 2007 held 3.58% of the company's equity and the median CEO held only 1.57%.

5. Governance Engineering

In this section, we consider PE investors' attitudes towards corporate governance. We ask two types of questions. First, we consider the structure of the boards of directors of their portfolio companies. Second, we consider their attitudes towards monitoring, hiring, and firing top management.

Table 15a confirms previous work in showing that PE investors prefer small boards of directors with over 90% including between 5 and 7 members. Larger private equity firms tend to have portfolio companies with larger boards. Table 15b indicates that PE investors will take roughly 3 of the board seats while allocating one or two to management and one or two to outsiders who are not affiliated with the PE firms. Again, the results for board composition are consistent with previous work and with conventional wisdom.

Table 16 indicates that PE investors are actively involved in advising their companies in the great majority of their deals. In fact, the median PE investor claims to be actively involved in all of his or her deals. Again, it would be surprising if we found otherwise.

Tables 17 and 18 explore how active the PE investors are in recruiting senior management teams in their portfolio companies. Table 17 indicates that the majority of PE investors, almost 70%, invest in the existing management team. They do not recruit their own senior management team before the investment. This is consistent with the notion that many private equity firms want to be seen as remaining "friendly" when pursuing transactions. Management is often critical to successfully executing transactions.

At the same time, however, a meaningful fraction of PE investors, 31%, do recruit their own senior management teams before investing. This suggests that different PE investors have very different investment strategies. It also suggests that the PE investors who bring in their own team do not place a great deal of weight on the value of incumbency.

After the investment, roughly 50% of the PE investors end up recruiting their own senior management team. This is consistent with some of the PE investors becoming more actively involved in the governance of their companies after the investment. When we combine the PE investors who recruit their own teams before, after, or both before and after investing, we find that almost 58% of the PE investors recruit their own senior teams. Again, this suggests that the PE investors are actively involved in monitoring and governing their portfolio companies.

Although it is not possible to ascribe any causality at this point, the cross-sectional results suggest that the PE investors who recruit their own teams have experienced better past investment performance. Similarly, larger and global private equity firms are more likely to recruit their own management teams at some point.

6. Operational Engineering / Value Creation

In this section, we attempt to explore the ways in which the PE investors attempt to create value for their investments and add value to their portfolio companies.

a. Deal Sourcing

PE investors claim that an important determinant of value creation is the ability to find or source deals that are proprietary in some sense. Accordingly, we asked several questions concerning deal sourcing. Table 19 reports the deal funnel experience of our PE investors. For every hundred opportunities, considered, the average PE investor deeply investigates fewer than 24, signs an agreement with fewer than 14 and closes on only 6. This suggests that PE investors devote considerable resources to evaluating transactions despite the fact that they will ultimately invest in only a very few. When we compare the deal funnel at different types of private equity firms, larger and older private equity firms pass a greater fraction of their deals through to the next stage. There are two possibilities that can explain this result. First, larger and older private equity firms may just have higher quality initial deal sourcing and hence do not need to weed out as many deals at all stages. Alternatively, the larger fund sizes may reduce the stringency of the deal funnel.

Table 20 considers the source and proprietary nature of the deals that the PE investor actually closed. According to the PE investors, almost 36% of their closed deals are "proactively self-generated," 7.4% are provided by management and 8.6% come from their executive network. These arguably have the potential to be proprietary. In contrast, 33% are investment banking generated, 8.6% come from deal brokers and 4.3% come from other PE firms. These are unlikely to be proprietary. Smaller and younger private equity firms generally tend to source more proprietary deals. This likely reflects smaller target deal sizes. Firms that invest in large and mega deals are less likely to be able to generate proprietary deals given that their targets are probably more likely to be sold in an auction process. Finally, younger private equity firms tend to utilize their executive networks more frequently.

When asked to summarize these sources, the PE investors considered almost 48% of their closed deals to be proprietary in some way. Unfortunately, we have no way of evaluating exactly what proprietary means nor can we validate the extent to which the deals truly are proprietary or advantaged. Nevertheless, we think these results indicate that the PE investors explicitly consider the extent to which their potential investments are proprietary, and attempt to invest in deals that are.

b. Deal Selection

In order to better understand how PE investors select and differentiate among investments, we asked them to rank the factors they considered in choosing their investments. Table 21 reports these results. The most important factor in choosing an investment is the business model / competitive position of the company. The management team, the PE investor's ability to add value and the valuation are the three next most important factors and are roughly of equal importance. The industry or market of the company and the fit with the PE investor's fund are of least importance.

Two of these results are notable. First, the PE investors put somewhat more weight on the business than on the management team. This result is highly consistent with the work of Kaplan, Sensoy, and Stromberg (2009) that shows that at least within the venture capital world, the business strategies of firms remain far more stable (and hence are more important) than the stability of management. Second, the importance of the ability to add value suggests that PE investors take operational engineering and adding value seriously. This also suggests that different private equity firms are likely to target and value investments differently. Private equity firms often have particular industry experience and focus. A successful track record in a particular industry is likely to lead to greater investment focus on a particular sector.

The survey asked the selection question in another way by asking what drivers of return PE investors bet on in making investments. Table 22a reports the percentage of PE investors who view a return driver as important while table 22b reports the ranking of those return drivers.

Growth in the value of the underlying business is mentioned as a return driver by 100% of the PE investors and is the highest ranked return driver. Operational improvements are close behind, ranked second and mentioned by 97% of the PE investors. Leverage and industry-level multiple arbitrage – selling at a higher multiple than buying – are mentioned by 76% and 65%, but rank well-behind growth and operational improvements. These results suggest that PE investors invest with the expectation or hope of growing the value of the business and improving operations. Leverage as well as buying low and selling high are viewed as less important.

Once again, these views may be a reflection of the current private equity environment. Historical leverage ratios (both during the financial boom as well as in the 1980s) were substantially higher than they are today for the typical private equity deal. Also, the sheer growth in the number of private equity firms and capital under management means that there is more competition for deals and, hence, less ability to buy companies at a cheap price.

c. Value Creation

Given the emphasis on growing the value of the business, our next questions asked the PE investors to identify the sources of that value creation. We asked them to distinguish between expected sources of value creation identified before the deal is closed, pre-deal, and actual sources of value creation, post-deal or after the investment is made.

c.i Pre-investment

Table 23 lists the pre-investment sources of value creation. There are a large number of sources of value for each deal. Hence, the total expected sources of value add up to well over 100% indicating that PE investors rely on several sources of value creation. The most frequently mentioned source of value is increasing revenue, identified by PE investors as being important in over 70% of their deals. Smaller private equity firms identified increasing revenue more often than larger private equity investors. This is not surprising given that there may be more room to increase revenues for the smaller deals targeted by smaller private equity investors. Follow-on acquisitions are also important in more than 50% of their deals. Reducing costs is identified as being important in only 36% of their deals. Introducing shared services – where the PE investors help their several portfolio companies aggregate demand for services or supplies to improve their bargaining power with suppliers – is also related to reduced costs and is important in 16% of the deals.

Both increasing sales and reducing costs would fit under operational engineering. If these answers are accurate (something we discuss in section 7), growth is more important than reducing costs,

suggesting a shift in emphasis from the cost cutting and agency cost reduction in the 1980s as emphasized in Jensen (1989). It's possible that the presence of merger and acquisition activity has led many firms to be more efficient on the cost side, i.e., there may be less corporate waste today than in the past [Kaplan (1997).]

Private equity investors also expect to create value in roughly one-third of their investments by redefining or changing the company's strategy / business model. In roughly one-third of their investments, they expect to create value by changing the CEO or CFO and by changing other members of the senior management team. All of these also would fit under the rubric of operational engineering. Presumably these actions, if successful, would lead to greater growth, reduced costs or both. Private equity investors also expect to create value by improving incentives (61%) and improving corporate governance (47%). These would fit under the categories of financial and governance engineering discussed in the previous section.

In slightly under half of their investments, private equity investors expect they are able to buy at attractive prices, both absolutely (44.3%) and relative to the industry (46.6%). In roughly half of their investments, they also expect they can facilitate a high value exit. This suggests that private equity investors believe they create a meaningful amount of value by being able to buy low and sell high. For smaller and younger private equity firms, the ability to engage in "multiple expansion" is higher. This may reflect the greater frequency of proprietary deals for these types of private equity firms and the potential to complete transactions at lower valuations. Among practitioners and limited partners, this would usually be considered a type of financial engineering, particularly buying low. From an academic perspective, this is difficult to characterize. It is potentially consistent with taking advantage of asymmetric information, superior bargaining ability, market timing and an efficient allocation of resources (i.e., selling to the right buyer).

We can say that, overall, the answers indicate that PE investors expect to create value pre-investment from a combination of financial, governance and operational engineering. Different private

equity firms typically express different value drivers. Private equity firms appear to engage in differentiated investment strategies with different sources of expected value creation.

We also asked the PE investors who in their organization is involved in identifying the (pre-investment) sources of value creation. Table 24 indicates that deal team members – i.e., the financial partners – are involved in virtually every deal. Perhaps the more interesting result is that operating partners – i.e., those primarily with operating rather than financial experience – are involved in identifying value sources in 45% of the deals. In addition to relying on operating partners, Table 24 indicates that the PE investors involve outside consultants in almost 37% of their deals. Smaller and younger private equity firms are less likely to engage outside consultants in their transactions. Overall then, table 24 suggests that the PE investors have made a meaningful investment in operational engineering although that investment is highly variable across firms.

c.ii. Post-investment:

Table 25 lists post-investment sources of value creation. The third column reports the difference in the mean result for pre- and post-investment for each variable. The same sources identified as important pre-investment remain important post-investment except that many of them increase in importance.

Increased revenue remains important in roughly 70% of the deals. Reduced costs increase in importance, rising to 47% of deals, but remain below increased growth. The use of shared services, redefining the strategy, changing the CEO or CFO, changing other members of the senior management team also increase by 6% to 14% relative to the pre-deal expected sources of value. If anything, then, operational engineering sources of value appear to be more important post-investment than they are identified as or expected to be pre-investment. Improving incentives and improving corporate governance also remain important sources of value, increasing by 4% and 5%, respectively, relative to pre-investment expectations.

Facilitating a high-value exit also becomes somewhat more important with almost 60% of the PE investors citing this as a post-investment source of value. This may reflect the historical perspective of private equity firms that were able to take more proprietary deals public or sell at a higher valuation.

Post-investment, then, the PE investors continue to claim they create value from a combination of financial, governance and operational engineering. Overall, the post-investment sources of value they realize are somewhat greater than the sources of value identified pre-deal.

We again asked the PE investors who in their organization is involved in identifying the (post-investment) sources of value creation. Table 26 indicates that the participants are similar to those involved pre-investment. Deal team members are involved in virtually every deal. Operating partners are involved in identifying value sources in 51% of the deals, slightly higher than the 45% pre-deal, while consultants are involved in 27%, somewhat less than the 37% of pre-deal.

d. Exit

Our final questions relating to value creation concern the exit strategy of PE investors. Table 27 indicates that PE investors expect to exit roughly one-half of their deals through a sale to a strategic buyer, i.e., to an operating company in a similar or related industry. In almost 30% of deals, they expect to sell to a financial buyer, i.e., to another private equity investor. In fewer than 20% of deals, do PE investors expect to exit through an IPO. These percentages are consistent with, in fact almost identical to, the exit results in Stromberg (2008) that 53% of deals with known exits are to strategic buyers, 30% are to financial buyers and 17% are through IPOs. Not surprisingly, there is a significant difference between larger and smaller PE investors. Larger PE investors expect to exit through an IPO more than 26% of the time while smaller PE investors expect to do so less than 11% of the time. For the largest deals, it is less likely that there are many strategic buyers large enough to sell to.

Tables 28a and 28b report, respectively, the presence and the ranking of factors that PE investors consider in deciding when to exit. In particular, we are interested in whether private equity firms believe that they can time the exit markets (either IPO or M&A markets) or if exits are driven by firm-specific

performance. Achieving the expected operational plan and capital market conditions are the most important and are ranked roughly equally. They are important for more than 90% of the PE investors. As with capital structure decisions, this suggests that PE investors put roughly equal weight on fundamentals and on market timing. Management's opinion, competitive considerations and hitting a return target are the next most important considerations and are ranked roughly equally. They are considered by more than 75% of the PE investors. Considering management's opinion is consistent with a cooperative / advisory relationship between PE investors and management. The requirement to hit a return target is potentially suggestive of an agency problem between the PE investors and their limited partners in which the private equity firm's limited partners cannot adjust investment performance for risk and, hence, the private equity managers maintain nominal return thresholds.

7. Private Equity Firm Organization

Up until this point, the survey questions have asked the PE investors to describe what they do with respect to their portfolio company investments. In this section, we report the answers to questions about the organization of the PE firms themselves with the idea of shedding additional light on how they operate and attempt to create value. Historically, private equity firms were small organizations. Over the past fifteen years, private equity firms have grown substantially. In this section, we seek to understand how this growth translates into organizational choices.

In Table 29, we report how the PE firms are organized. The notable result here is that only 37% of the PE investors are organized as generalists. This is very different from the organization of the PE firms in the 1980s when most firms and most individual PE investors were largely generalists. At the same time, more than 50% of the firms are organized by industry. Organization by industry likely carries three advantages – PE investors who specialize in an industry are more likely to be able to find an opportunity in that industry, to be able to evaluate the opportunity when it appears, and to understand whether and how it is possible to add value to that opportunity.

In Table 30, we report the percentage of investment professionals in different specializations. A majority of employees in our sample firms are deal professionals. An additional 20% also can be considered deal related because they are involved in deal sourcing and deal execution, bringing to almost 75% the percentage of employees who are deal oriented. At the same time, 8.7% of employees are operating professionals, 1.2% are consulting professionals, 5.7% are shared service professionals and 0.4% are HR professionals for a total of 16% who can be considered exclusively concerned with operational engineering. While this percentage is much lower than the percentage of employees that are deal oriented, it does indicate that meaningful employee resources are devoted to value creation.

Table 31 considers the extent to which PE investors make use of other advisors to help with deal sourcing and with value creation. Almost 50% of the PE investors utilize senior advisors, a CEO council, or its equivalent. In general, these advisors provide non-financial advice on businesses. Almost 40% of the PE investors have an advisory board of such advisors. When we put these together, almost 66% of the PE investors have an advisory board or utilize senior advisors. The PE investors describe these advisors or executives as helping with deal flow, assisting with investment due diligence, providing industry-specific information, serving on boards post-investment, as well as advising on operating and managerial issues post-investment. Consistent with the earlier evidence on operational engineering, this suggests that many of the PE investors have made meaningful investments in obtaining operating advice.

Almost 32% of the PE investors hire strategy consultants to help with operating plans. When we combine these with the senior advisors and CEO councils, we find that 72% of the PE investors employ an advisory board, CEO council or strategy consultants. Many employ a combination of these. Again, this suggests that many of the PE investors have made meaningful investments in obtaining operating advice. This is perhaps not surprising given the growth and increased competitiveness within the industry and the expected sources of returns.

8. Concerns

In our analyses, we have assumed that the PE investor responses are accurate and interpret the survey accordingly. The PE investors filled out the survey with the assurance that they would not be identified and that their responses would be aggregated so they could not be identified. Accordingly, no individual firm has any incentive to report overly positive or otherwise inaccurate responses. Doing so will not benefit any one individual firm directly. We recognize, however, it is possible that some PE investors might report overly positively on some questions in the hope that it will cast the PE industry in a more positive light. In this section, we discuss where we think those incentives and behaviors might affect our results.

Any reporting biases should have a minimal effect on how PE investors report the methods they use to value companies. Whether a PE investor uses net present value or IRR seems uncontroversial. The determinants of target IRR also seem uncontroversial. One area in valuation where there might be some incentive to overstate is on target IRR. PE investors may want their limited partners to believe they are targeting higher IRRs than is really the case. The countervailing factor is that if the target IRR is overstated, limited partners ultimately will be disappointed and the ability to continue to raise new (and potentially larger) funds may be reduced.

We also think it unlikely that the PE investors gave biased answers to the questions on capital structure. If anything, one might expect them to understate the extent to which they time the market and use as much leverage as they can. Inconsistent with this, most of the PE investors claim that debt availability and current interest rates are important considerations.

It also seems unlikely that PE investors have an incentive to give biased answers to the questions concerning incentives and boards. Alternatively, one might argue that they have an incentive to downplay the extent to which they replace incumbent management. To the extent that PE investors need to partner with incumbent management, it would not be in their interest to report that they frequently replace incumbents. Inconsistent with this incentive, the majority of PE investors report that they bring in their own top management at some point.

The section where there is potentially an incentive to be overly positive is the section on value creation. To the extent the PE investors want their LPs to believe that they have access to "proprietary" deals, PE investors may have an incentive to overstate the extent to which their deals are proprietary. Consistent with this, our PE investors do say that roughly 50% of their investments are proprietary in some way. As mentioned above, we do not have any way to evaluate the extent to which this is true. At the same time, however, proprietary deal sourcing suggests that PE investors are able to buy low. One might expect PE investors to have an incentive not to say they can buy low because it does not reflect operating value creation on the part of the PE investors. In fact, the PE investors do identify buying low and selling high as an important source of value.

To the extent that PE investors want to be known for growing their investments (and creating jobs) rather than reducing costs (and cutting jobs), they may have an incentive to overstate the extent to which they rely on growth and understate cost cutting. The result that PE investors identify increasing revenue as the most important source of value both pre- and post-investment is potentially consistent with this. On the other hand, the fact that PE investors identify reducing costs as more important post-investment than pre-investment is less consistent with understating cost cutting. Again, a countervailing force here is limited partners expect to see growth and look for that value creation.

Overall, then, while the PE investors may have some incentives to shade their survey answers in some areas, particularly regarding deal sourcing and growth, the answers they provided do not give us strong reasons to believe that they acted consistently on those incentives.

9. Firm Types

The previous sections of this paper examined private equity investor practices in financial, governance and operational engineering. The analyses consider each practice separately. In this section, we examine the extent to which certain practices are correlated across GPs. In doing so, we attempt to measure whether we can classify different groups of GPs as having different strategies. Our approach is to use the grouping of answers for a given private equity firm to extract "types" through cluster and factor

analyses. We then examine how these "types" map into our notion of operational, financial, and governance engineering. Finally, we look for variation in firm founder backgrounds and how the types identified above are influenced by the career histories of the individuals which started the various private equity organizations.

a. Variables

In this section, we create a variety of variables that help identify GP practices using measures that embody financial, governance and operational engineering. In order to capture difference in investment selection methods, we create a variable that equals one if the GP's primary deal evaluation measure is IRR. We create a measure of proprietary deal sourcing that sums the fraction of deals that GPs say are self-generated, inbound from management and from their executive network.

We create four capital structure / financial engineering variables that help us characterize the various private equity firms. CSTIME, a variable that measures market timing behavior, is calculated as the sum of the rankings GPs give to timing factors – "as much as debt as the market will allow" and "current interest rates and how much the company can pay" – as important determinants of capital structure. Similarly, CSTRADE explores marketing timing behavior and is sum of a private equity firm's rankings for "maximize trade-off between tax benefits and risk of default" and "industry that the firm operates in" – as important determinants of capital structure. We also create two variables that measure the overall targeted debt levels that the private equity firms say the typically employ. DTCAP is simply the typical debt to total capital ratio that the private equity manager states they seek while DTEB measures the typical debt to EBITDA ratio.

Two variables measure management change that private equity managers engage in both before and after the investment. First, we define a variable RECRUITB that equals one if the GP typically recruits its own senior management team before investing. Second, we define a variable RECRUITBA that equals one if the GP recruits its own senior management team before or after investing.

The next set of variables is associated with sources of value that private equity firms say they identify or look to provide. COSTRED measures the fraction of deals for which the GP expects prospective cost reductions prior to the investment to be an important source of value. REVGROW measures the fraction of deals for which the GP expects prospective revenue growth prior to the investment to be an important source of value. CHCEO is the fraction of deals for which the GP expects that changing the CEO will be an important source of value prior to the investment. BUYLO is a measure of the general partners' belief that they can create value prospectively by purchasing a company at a low price. The variable is calculated as the sum of the fraction of deals a GP expects that buying low, buying low relative to the industry, or facilitating a high-value exit will be important sources of value. OPPART is simply the fraction of deals that involve operating partners.

We also create variables that measure the factors that GPs find most important in an investment decision. INVBUS is the sum of the ranks given to the business model and the industry in an investment decision. INVMGMT is the rank given to the management team. INVADDV is the rank given to the ability to add value.

Related to these, we create variables that measure the return drivers that GPs bet on. GROWTH equals one if the GP's top ranking is growth in the value of the business. OPIMP equals one if the GP's top ranking is operating improvements. MULTARB equals one if the GP's top ranking is industry level multiple arbitrage.

Some univariate correlations are worth noting (although they are not reported in a table). High debt to total capital and to high debt to EBITDA are positively correlated with capital structure timing, cost reductions and multiple arbitrage while negatively correlated with proprietary deals, revenue growth, and investing in management. Investing in adding value is positively correlated with operating improvements, cost reductions, operating partners, and changing CEOs, but negatively correlated with investing in management. Recruiting a CEO beforehand is correlated with proprietary deals, revenue growth, and buying low / selling high. Finally, proprietary deals use less debt, less market timing, less cost reduction, and more growth.

b. Cluster Analysis

We first use cluster analysis to divide the firms into groups that allow us to explore how different firm characteristics co-vary. Cluster analysis groups answers in such a way that the private equity firms within a given cluster are more similar to each other than they are to private equity firms in other clusters. We use partition clustering which divides "the observations into a distinct number of non-overlapping groups" (kmeans in Stata). We restrict the sample to the 58 firms with complete data responses. We report our results with three clusters. The results are qualitatively similar with four or five clusters.

Table 32 reports the results. The second cluster is characterized in terms of our notions of operational, financial, and governance engineering. The firms in this cluster are more likely to say they choose capital structure using trade-off considerations, are more likely to recruit an outside CEO / change the CEO, are more likely to focus on operating improvements including cost reductions and revenue growth, and are more likely to use operating partners. Many of these differences are statistically significant (in univariate tests) between clusters 1 and 2. In sum, cluster 2 firms seem to say that they focus more heavily on implementing operating improvements and bringing in new management.

Cluster 1 includes firms that say they engage in the most financial engineering and least operational engineering. They are less likely to use capital structure tradeoffs, less likely to mention adding value, operating improvements, cost reductions and operating partners, and are more likely to buy low and sell high. The firms in this cluster also tend to be smaller than those in the other two clusters. Firms in the first cluster also tend to give their management teams a larger equity stake in the business. The third cluster is intermediate between the first two on financial and operational engineering.

c. Factor Analysis

As an alternative to cluster analysis, we use factor analysis to extract the main dimensions of variation in the characteristics of our sample firms. In factor analysis, one seeks to identify correlations

among observed variables in terms of underlying unobserved factors of a smaller dimension. Essentially, factor analysis models the observed variables as a function of the unobserved factors.

Table 33 reports the factor loadings. The first three factors explain almost two-thirds of the variance in the data and have natural interpretations. The first factor has positive loadings on debt levels, operating improvements, cost reductions, operating partners and adding value and negative loadings on growth, revenue growth, proprietary deal and investing in the business. As with the cluster analysis, this suggests that some firms focus on operating improvements while others focus on buying good businesses where they have some proprietary sourcing advantage. The second factor has its highest positive loadings on changing the CEO, recruiting a CEO before the deal closes while having negative loadings on investing in management and operating improvements. This suggests a strong tendency for firms to differ in the extent to which they invest in new management versus incumbent. The third factor has high positive loadings on debt levels, capital structure timing and assets under management while having negative loadings on adding value and operating improvements. This suggests a factor that is operating improvements versus financial engineering.

Both the cluster analysis and the factor analysis appear to divide firms into those that have a focus on operating improvements versus financial engineering and those that have a focus on investing in new management versus the incumbent. These results provide one expected and one unexpected result. First, we do not find it surprising that private equity firms pursue strategies that are largely based on financial engineering and others pursue strategies based on operational engineering. In the next section, we explore whether these differences result from variation in the career history of the private equity firm founders. The different firm strategies towards incumbent management, however, are surprising. The importance of people and incentive alignment has been well established within the private equity industry. What has not been explored are the distinctive approaches to solving these people issues. Future research should explore the effectiveness of these various approaches.

10. Founder Types and Firm Types.

In this section, we consider whether PE firm strategies are related to the characteristics of the founding general partners. We classify the founding general partners of each of the PE firms in our sample. In our sample of firms, we gathered information on the identity of firm founders from the private firm's web pages or news articles. Education and career histories were then gathered from the same sources or via LinkedIn.

A founding general partner is classified as "financial" if the GP worked in investment banking, commercial banking, investment management, or had previously been a chief financial officer. We "Operational" GPs are those founders that had prior work history in consulting, operations, or general management. Finally, we classify a founding general partners has having a "private equity" background if the GP came from another PE or venture capital firm prior to founding this one. For each firm, we calculate the average background of the firm by simply classifying the fraction of founders with each type of career history. We then perform a cluster analysis on those three variables (fraction of each career history) and classify 27 firms as having a finance background, 25 firms as having an operational background, and 9 firms as having a private equity background.

In Table 34 we explore how these types relate to specific strategies. Private equity firms founded by financial general partners appear more likely to favor financial engineering and investing with current management. Private equity firms that have founders with private equity experience appear to be the most strongly engaged in operational engineering. They are more likely to invest with the intention of adding value, to invest in the business, to look for operating improvements, to change the CEO after the deal, and to reduce costs. Firms founded by general partners with operational backgrounds have investment strategies that fall in between the other two groups.

These results, while preliminary, do seem to indicate that career histories of firm founders have persistent effects on private equity firm strategy. This result is similar to the work of Bertrand and Schoar (2003) that demonstrate persistent effects of senior management in organizations they lead in terms of firm strategy. The strategies identified for private equity firms clearly aligns with the firm founders careers. While these results are rather preliminary, future research should explore whether investments

that align with the "strength" of the firm founders do better or worse in the long-run than do investments that deviate from these "strengths."

11. Conclusion

Over the past decade, academic finance has explored the impact of PE firms in a number of areas by examining sometimes limited sets of data. In this paper, we attempt to highlight the impact of PE investors utilizing different data. We report what PE investors say they do by tabulating the results of a survey of PE investing practices. Because PE investors are highly educated, have strong incentives to maximize value, and have been very successful, it seems likely that their practices also have been successful. In particular, we are interested in how many of their responses corrleate with what academic finance knows and what it teaches. Do private equity investors do what the academy says are "best practices?"

We find that very few investors use DCF or net present value techniques to evaluate investments, contrary to what one might expect. Rather, they rely on internal rates of return and multiples of invested capital. This contrasts with the results in Graham and Harvey (2001) who find that CFOs use net present values as often as internal rates of return. The result also conflicts with the focus on net present value in most business school finance courses. Furthermore, few PE investors use the capital asset price model to determine a cost of capital. Instead, PE investors typically target a return on their investments well above a CAPM-based rate. Target IRRs also seem to be adjusted by different PE firms utilizing different factors. Hence, it seems likely that PE firms will have different target IRRs for the same deals.

The fact that they do not use DCF techniques is interesting. It may indicate that IRR and MOIC techniques are sufficiently robust or effective that DCF techniques are not necessary. Alternatively, it may indicate some practical deficiency with DCF techniques, especially in the private equity setting where fund structures limit investment horizons and there is considerable asymmetric information between general and limited partners. These settings may make managing via IRR-based investment decisions better.

The fact that PE investors target returns that exceed CAPM-based returns is consistent with their believing that they add meaningful value to their investments and that they need to do so in order to generate their compensation. As the industry becomes more competitive, it will be interesting to see if target hurdle rates come down.

We also find that PE investors believe that absolute, not relative performance is most important to their LP investors. The focus on absolute performance is notable given the intense focus on relative performance or alphas for public market investments. There are two possible explanations for this. First, LPs, particularly pension funds, may focus on absolute returns because their liabilities are absolute. Alternatively, the chief investment officers of the LPs choose a private equity allocation based on relative performance, but the professionals who make the investment decisions care about absolute performance or performance relative to other PE firms. We believe that the advent of greater dissemination of risk-based performance benchmarks like PMEs is likely to affect the view of limited partners and potentially trickle back down to the private equity general partners.

In choosing the capital structures for their portfolio companies, PE investors appear to rely equally on factors that are consistent with capital structure trade-off theories and those that are consistent with market timing. Again, these results are somewhat different from those for the CFOs in Graham and Harvey (2001). The market timing result is consistent with the results in the finding in AJSW (2013). This result is arguably favorable both to the traditional instruction at business schools and to the more recent advances in behavioral finance.

PE investors expect to provide strong equity incentives to their management teams and believe those incentives are very important. They also structure smaller board of investors with a mix of insiders, PE investors and outsiders.

Finally, PE investors say they place a heavy emphasis on adding value to their portfolio companies, both before and after they invest. The sources of that added value, in order of importance, are increasing revenue, improving incentives and governance, facilitating a high-value exit or sale, making additional acquisitions, replacing management and reducing costs. Consistent with adding operational

value, the PE investors make meaningful investments in employees and advisors who provide advice and help in implementing operating improvements.

While we recognize that it is possible that some PE investors might report overly positively on some questions in the hope that it will cast the PE industry in a more positive light, particularly in some aspects of deal sourcing and value creation, the answers they provided do not give us strong reasons to believe that they have a meaningful impact on our findings and conclusions.

We finish with exploratory analyses to consider how financial, governance and operational engineering practices covary within PE firms. The analyses suggest that different firms take very different strategies. For example, some focus much more heavily on operational engineering while others rely heavily on replacing incumbent management. These investment strategies are strongly influenced by the career histories of the private equity firm founders. It will be interesting (and, with these data, possible) to see which of these strategies, if any, exhibit superior performance in the future.

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Table 1: PE Firm Respondents
Assets under management (AUM), performance of most recent fund (if available), and age of each private equity firm in the sample as of December 2012 from Preqin. Information on firms not covered by Preqin is taken from firm websites and in the media. We also use the results of the current survey to determine office locations of firms in the sample.

Variable	N	Mean	25th Perc.	Median	75th Perc.	St. Dev.
AUM ($m)	79	9,548.6	750.0	3,400.0	11,000.0	15,021.1
IRR over Benchmark (%)	58	2.7	-3.9	0.9	6.9	11.8
Multiple (x)	58	1.3	1.2	1.3	1.5	0.3
Age (years)	79	19.5	12.0	19.0	26.0	10.5
Firms with						
Office(s) only in the US	44					
Office(s) outside the US	35					

Table 2: Enterprise Value
Enterprise Value of portfolio companies of private equity investors. Question is "what fraction of the companies you invest in have the Total Enterprise Value within the following ranges?"

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR	Old	Young		Local	Global
< US$25m	11.8	0.0	19.0	5.5	***	4.4	9.4	6.2	16.1	**	16.2	6.3
US$25m - US$100m	26.3	10.0	44.4	10.4	***	16.8	23.5	20.1	31.0		33.4	17.5
US$100m - US$500m	28.7	22.0	28.6	28.8		29.3	31.9	31.4	26.6		27.6	30.1
US$500m - $1b	16.8	10.0	5.2	27.0	***	22.0	19.8	19.4	14.9		12.7	21.9
> US$1b	16.4	0.0	2.8	28.3	***	27.4	15.3	22.9	11.4	**	10.2	24.1
Number of responses	79	79	37	42		29	29	34	45		44	35

Table 3: Type of Investments
Types of investments considered by PE investors.

	Mean	Low AUM	High AUM		Low IRR	High IRR	Old	Young		Local	Global
LBOs	90.1	82.9	97.2	**	92.3	96.2	93.9	86.8		92.7	86.7
Growth equity	73.2	74.3	72.2		65.4	73.1	69.7	76.3		73.2	73.3
Distress	29.6	17.1	41.7	**	26.9	34.6	30.3	28.9		19.5	43.3
PIPEs	32.4	20.0	44.4	**	38.5	38.5	45.5	21.1	**	31.7	33.3
Other	8.5	8.6	8.3		3.8	7.7	9.1	7.9		7.3	10.0
Number of responses	71	35	36		26	26	33	38		41	30

Table 4: PE Individual Respondents
Title of individual filling out survey. Sample divided by high or low AUM, IRR of most recent fund, age of PE investor, and whether PE investor has a global presence. IRR and Multiple data are from Preqin.

	Mean	Low AUM	High AUM		Low IRR	High IRR	Old	Young		Local	Global
General Partner / Director	25.3	21.6	28.6		31.0	31.0	32.4	20.0		25.0	25.7
Managing Partner	22.8	35.1	11.9	**	13.8	20.7	20.6	24.4		29.5	14.3
Managing Director	29.1	18.9	38.1		37.9	20.7	26.5	31.1		22.7	37.1
CFO	3.8	5.4	2.4		3.4	6.9	2.9	4.4		6.8	0.0
Other	19.0	18.9	19.0		13.8	20.7	17.6	20.0		15.9	22.9
Number of responses	79	37	42		29	29	34	45		44	35

Table 5a: Deal Evaluation Metrics
The percentage of deals PE investors use different methods to evaluate an investment.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR		Old	Young		Local	Global
Gross IRR	92.7	100.0	88.5	97.0		99.9	96.9		100.0	86.4	**	94.2	90.5
Multiple of invested capital	94.8	100.0	92.1	97.7		99.1	93.3		96.1	93.7		95.5	93.8
Adjusted Present Value (APV) DCF	9.3	0.0	7.1	11.5		9.3	7.3		3.9	13.9		10.5	7.6
WACC-based DCF	10.9	0.0	9.3	12.5		5.5	15.2		8.9	12.5		9.4	12.9
Comparable company EBITDA multiples	71.7	100.0	71.4	72.1		63.0	90.7	**	75.9	68.1		76.7	64.8
Free cash flow return to equity	43.8	33.0	29.7	58.3	***	45.2	43.7		44.4	43.2		40.7	48.1
Other	13.8	0.0	10.3	17.4		7.0	21.7		12.1	15.3		8.3	21.4
Number of responses	67	67	34	33		25	23		31	36		39	28

Table 5b: Deal Evaluation Methods
The average ranking of different methods PE investors use to evaluate an investment, where 10 is the highest and 1 is the lowest.

	Mean	Low AUM	High AUM		Low IRR	High IRR		Old	Young		Local	Global
Accounting Rate of Return	0.6	0.9	0.2		0.7	0.7		0.5	0.7		0.6	0.5
Adjusted Present Value	0.9	0.6	1.2		0.6	0.8		0.5	1.3		0.8	1.0
Discounted Payback Period	1.7	1.7	1.6		1.3	1.3		1.3	1.9		1.9	1.3
Earnings Multiple Approach	6.1	6.0	6.1		5.5	6.2		5.4	6.7		6.1	6.1
Hurdle Rate	3.6	3.7	3.5		4.4	2.0	**	3.4	3.8		3.7	3.5
Internal Rate of Return	9.2	9.0	9.4		9.8	9.1		9.5	9.0		8.9	9.6
Net Present Value	2.8	2.1	3.4		3.7	2.0		2.5	3.0		2.4	3.3
Payback Period	2.4	2.4	2.4		2.1	2.1		2.5	2.3		2.8	1.7
Profitability Index	0.9	1.0	0.8		0.8	0.3		0.3	1.5	**	0.5	1.4
Other	2.1	2.5	1.6		2.2	2.8		2.3	1.9		1.9	2.3
Number of responses	67	34	33		25	23		31	36		39	28

Table 6: Discount to Management EBITDA Forecasts
The discount PE investors normally take to management's EBITDA in their pro forma models.

	Mean	Median	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
Discount to management's EBITDA	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.3	0.2	0.2
Number of responses	44	44	27	17	15	14	20	24	29	15

Table 7a: Terminal Value Calculation
The fraction of deals PE investors you use to calculate the exit value or terminal value of the model.

	Mean	Median	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
Comparable companies	81.4	100.0	75.3	87.7	81.3	88.6	87.3	76.3	78.2	85.8
Comparable transactions	71.4	99.0	67.8	75.0	73.2	80.3	79.5	64.4	76.1	64.8
DCF-based growing perpetuity	27.3	10.0	20.5	34.3	28.1	16.4	26.6	27.9	21.0	36.0
Other	25.6	0.0	33.5	17.4	20.7	31.1	22.8	27.9	28.7	21.3
Number of responses	67	67	34	33	25	23	31	36	39	28

Table 7b: Comparable Company Selection
Determinants of selection of comparable companies for multiples valuation and/or exit value?

	Mean	Low AUM	High AUM		Low IRR	High IRR	Old	Young	Local	Global
Industry	96.9	96.9	97.0		95.8	100.0	100.0	94.1	94.6	100.0
Riskiness	49.2	34.4	63.6	**	54.2	56.5	45.2	52.9	48.6	50.0
Size	84.6	87.5	81.8		87.5	87.0	90.3	79.4	86.5	82.1
Growth	73.8	75.0	72.7		79.2	69.6	77.4	70.6	75.7	71.4
Margins	66.2	59.4	72.7		83.3	65.2	67.7	64.7	62.2	71.4
Capital intensity	52.3	31.3	72.7	***	62.5	52.2	51.6	52.9	51.4	53.6
Geography	56.9	43.8	69.7	**	58.3	69.6	67.7	47.1	48.6	67.9
Other	4.6	6.3	3.0		4.2	8.7	3.2	5.9	8.1	0.0
Do not use comparables	3.1	3.1	3.0		4.2	0.0	0.0	5.9	5.4	0.0
Number of responses	65	32	33		24	23	31	34	37	28

Table 8a: IRR
The target value of gross IRR used by PE investors.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR	Old	Young	Local	Global
Gross IRR Target	27.0%	25.0%	30.0%	24.1%	**	24.5%	24.9%	24.8%	29.3%	25.7%	28.9%
Number of responses	62	62	31	31		24	22	31	31	36	26

Table 8b: IRR Determinants
The variables that PE investors use to adjust their gross IRR target.

	Mean	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
Firm's riskiness	86.2	84.4	87.9	91.7	91.3	90.3	82.4	91.9	78.6
Leverage	47.7	40.6	54.5	58.3	52.2	51.6	44.1	54.1	39.3
Historical return expectations of LPs	30.8	40.6	21.2	20.8	30.4	22.6	38.2	37.8	21.4
Other	9.2	6.3	12.1	8.3	17.4	16.1	2.9	10.8	7.1
N/A	4.6	6.3	3.0	0.0	0.0	0.0	8.8	2.7	7.1
Number of responses	65	32	33	24	23	31	34	37	28

Table 8c: IRR Determinants / Adjustments
The fraction of deals that PE investors adjust cash flows or the IRR to reflect different risks.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR	Old	Young		Local	Global
Risk of Unexpected Inflation	17.7	0.0	8.2	26.9	**	26.0	13.9	21.2	14.5		12.2	25.0
Interest Rate Risk	25.5	2.0	22.6	28.3		33.5	26.5	26.3	24.8		26.3	24.5
Term Structure Risk	18.5	0.0	16.6	20.3		14.9	26.9	22.9	14.4		13.5	25.0
GDP or Business Cycle Risk	55.0	50.0	47.8	61.9		63.6	55.7	59.4	51.0		54.2	56.0
Commodity Price Risk	28.8	21.0	22.8	34.7		35.5	27.1	30.6	27.2		28.0	29.9
Foreign Exchange Risk	20.2	10.0	15.7	24.5		25.6	16.6	23.5	17.1		12.9	29.8
Distress risk	13.0	0.0	8.7	17.2		13.8	11.9	17.2	9.1		9.0	18.2
Size	28.6	10.0	31.8	25.5		25.1	25.5	22.9	33.8		31.1	25.3
Market-to-Book ratio	7.5	0.0	5.3	9.6		9.3	5.6	7.4	7.6		6.6	8.6
Momentum	11.8	0.0	9.6	13.9		17.0	10.3	18.9	5.4	**	12.9	10.4
Illiquidity	20.3	0.0	22.2	18.5		19.8	6.8	15.2	25.0		15.8	26.3
Other	1.4	0.0	2.8	0.0		0.0	0.0	0.0	2.6		2.4	0.0
Number of responses	65	65	32	33		24	23	31	34		37	28

Table 9: MOIC
The target value of gross MOIC used by PE investors.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR	Old	Young		Local	Global
Multiple	2.85	2.50	3.16	2.54	**	2.51	2.56	2.50	3.14	**	2.98	2.67
Number of responses	62	62	31	31		24	21	28	34		36	26

Table 10: Benchmark for LPs
The most important benchmark for the limited partners (LPs) investing in the private equity investors. Net indicates net of all fees.

	Mean	Low AUM	High AUM	Low IRR	High IRR	Old	Young		Local	Global
Net IRR	25.4	29.0	21.9	27.3	21.7	26.7	24.2		22.2	29.6
Net IRR vs. S&P	7.9	6.5	9.4	9.1	4.3	10.0	6.1		8.3	7.4
Net IRR with respect to fund vintage year	27.0	19.4	34.4	27.3	43.5	40.0	15.2	**	33.3	18.5
Net Multiple / Cash-on-Cash	38.1	45.2	31.3	31.8	30.4	20.0	54.5	***	33.3	44.4
IRR of other GPs	1.6	0.0	3.1	4.5	0.0	3.3	0.0		2.8	0.0
Number of responses	63	31	32	22	23	30	33		36	27

Table 11: Net IRR marketed to LPs.
The typical IRR that private equity investors market to their LPs.

	Mean	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
0 - 5%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 10%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 - 15%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 - 20%	15.6	18.8	12.5	13.0	13.0	23.3	8.8	18.9	11.1
20 - 25%	50.0	40.6	59.4	65.2	47.8	53.3	47.1	45.9	55.6
25 - 30%	23.4	25.0	21.9	21.7	30.4	20.0	26.5	24.3	22.2
> 30%	10.9	15.6	6.3	0.0	8.7	3.3	17.6	10.8	11.1
Number of responses	64	32	32	23	23	30	34	37	27

Table 12: Capital Structure at Closing
The typical capital structure at closing for private equity portfolio companies measures as debt-to-total-capital and debt-to-EBITDA.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR	Old	Young		Local	Global
Debt-to-Capital Ratio	55.7%	60.0%	54.3%	57.2%		56.6%	56.9%	55.0%	56.4%		55.0%	56.8%
Number of responses	62	62	31	31		22	23	30	32		37	25
Debt-to-EBITDA Ratio	3.9	4.0	3.6	4.2	**	4.1	4.2	4.2	3.6	**	3.8	4.1
Number of responses	60	60	31	29		22	21	29	31		36	24

Table 13a: Capital Structure Factors Considered Important
Factors that PE investors consider in determining how much debt to raise for a transaction.

	Mean	Low AUM	High AUM		Low IRR	High IRR		Old	Young		Local	Global
Ability of debt to force operational improvements	39.1	31.3	46.9		39.1	30.4		33.3	44.1		29.7	51.9
As much as market will allow	65.6	65.6	65.6		65.2	69.6		73.3	58.8		62.2	70.4
Current interest rates and how much the company can pay	95.3	93.8	96.9		95.7	95.7		96.7	94.1		97.3	92.6
Industry that the firm operates in	96.9	93.8	100.0		95.7	95.7		93.3	100.0		97.3	96.3
Maximize trade-off between tax benefits and risk of default	67.2	59.4	75.0		65.2	78.3		66.7	67.6		64.9	70.4
Other	35.9	40.6	31.3		17.4	52.2	**	36.7	35.3		43.2	25.9
Number of responses	64	32	32		23	23		30	34		37	27

Table 13b: Capital Structure Factors Ranked
Rank of factors that PE investors consider important in determining how much debt to raise for a transaction where a higher number means it is a more important factor.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR		Old	Young		Local	Global
Ability of debt to force operational improvements	1.3	0.0	1.1	1.6		1.0	1.2		1.1	1.5		0.9	1.9
As much as market will allow	2.5	3.0	2.5	2.5		2.5	2.7		2.8	2.3		2.5	2.6
Current interest rates and how much the company can pay	5.0	5.0	4.7	5.3		5.1	4.9		5.0	4.9		4.9	5.0
Industry that the firm operates in	4.5	5.0	4.4	4.5		4.7	4.0		4.3	4.6		4.5	4.4
Maximize trade-off between tax benefits and risk of default	2.5	3.0	2.4	2.7		2.7	2.7		2.5	2.6		2.5	2.5
Other	1.8	0.0	2.1	1.4		0.8	2.7	**	1.8	1.8		2.1	1.3
Number of responses	64	64	32	32		23	23		30	34		37	27

Table 14:
The typical equity ownership of private equity investors, the CEO, and top management.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR		Old	Young		Local	Global
PE investors	79.6	85.0	74.9	84.3	**	82.7	83.6		82.9	76.6		81.2	77.3
CEO	8.0	5.0	10.0	6.0		7.1	6.1		7.8	8.2		6.9	9.5
Top 10 Management (excluding CEO)	7.2	7.0	8.1	6.3	**	7.1	6.9		7.0	7.3		7.6	6.6
Other employees	1.8	0.0	1.1	2.4		3.0	0.9		1.7	1.8		1.3	2.5
Other	3.5	0.0	6.0	1.1	**	0.1	2.6		0.6	6.1	**	3.0	4.3
Number of responses	64	64	32	32		23	23		30	34		37	27

Table 15a: Board of Directors Size
Desired size of board of directors of private equity investors.

	Mean	Low AUM	High AUM	Low IRR	High IRR	Old	Young		Local	Global
3 or less	3.1	3.1	3.1	8.7	0.0	3.3	2.9		0.0	7.4
4	1.6	3.1	0.0	0.0	4.3	0.0	2.9		2.7	0.0
5	32.8	40.6	25.0	21.7	30.4	23.3	41.2		37.8	25.9
6	10.9	12.5	9.4	21.7	8.7	20.0	2.9	**	10.8	11.1
7	46.9	37.5	56.3	39.1	52.2	46.7	47.1		43.2	51.9
8	3.1	0.0	6.3	8.7	0.0	3.3	2.9		2.7	3.7
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
10	1.6	3.1	0.0	0.0	4.3	3.3	0.0		2.7	0.0
11 or more	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Number of responses	64	32	32	23	23	30	34		37	27

Table 15b: Board of Directors Composition
Desired composition of board of directors of private equity investors.

	Mean	Median	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
Inside directors	1.6	1.0	1.6	1.5	1.4	1.5	1.5	1.6	1.5	1.7
PE directors	2.8	3.0	2.7	2.9	2.8	2.9	2.8	2.7	2.7	2.8
Outside directors	1.7	2.0	1.6	1.9	1.9	1.7	1.9	1.6	1.8	1.6
Other	0.1	0.0	0.1	0.1	0.0	0.2	0.1	0.1	0.1	0.1
Number of responses	64	64	32	32	23	23	30	34	37	27

Table 16: Private Equity Involvement in Portfolio Companies
The fraction of deals in which the private equity investors become involved in the management of portfolio companies, i.e., actively advising the company on strategic choices.

	Mean	Median	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
% of deals	87.5	100.0	84.8	90.1	81.3	90.2	85.2	89.5	83.0	93.6
Number of responses	64	64	32	32	23	23	30	34	37	27

Table 17: Private Equity Recruitment of Management Teams
Percentage of private equity investors who recruit their own senior management teams before investing, after investing, and before or after investing.

Before Investing

	Mean	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
Yes	31.3	31.3	31.3	26.1	39.1	30.0	32.4	29.7	33.3
No	68.8	68.8	68.8	73.9	60.9	70.0	67.6	70.3	66.7
Number of responses	64	32	32	23	23	30	34	37	27

After Investing

	Mean	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
Yes	50.0	40.6	59.4	43.5	52.2	50.0	50.0	37.8	66.7
No	50.0	59.4	40.6	56.5	47.8	50.0	50.0	62.2	33.3
Number of responses	64	32	32	23	23	30	34	37	27

Before or after investing

	Mean	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
Yes	57.8	53.1	62.5	47.8	63.4	56.7	58.1	48.6	70.4
No	42.2	46.9	37.5	52.2	36.6	43.3	41.9	51.4	29.6
Number of responses	64	32	32	23	23	30	34	37	27

Table 18: Private Equity Replacement of CEOs After Investing
The percentage of deals in which the private equity investor replaces the CEO after the investment is made.

	Mean	Median	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
% of deals with the CEO swapped out	33.3	30.0	30.3	36.3	27.9	37.3	27.7	38.2	32.0	35.0
Number of responses	64	64	32	32	23	23	30	34	37	27

Table 19: Deal Funnel
Percentage of opportunities considered by PE investors reaching different stages.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR	Old	Young		Local	Global
All considered opportunities	100.0	100.0	100.0	100.0		100.0	100.0	100.0	100.0		100.0	100.0
Review with partner group / investment committee	61.8	50.0	56.9	66.6		65.8	61.3	63.0	60.8		56.5	69.2
Meet management	52.8	40.0	38.1	67.0	***	58.5	53.2	62.2	44.5	***	42.0	67.5
Limited due diligence	49.1	40.0	35.2	62.6	***	56.7	46.5	59.1	40.4	***	42.5	58.1
Deep due diligence	23.7	20.0	16.3	30.9	***	29.0	21.2	29.5	18.7	***	19.1	30.0
Offer term sheet / negotiate detailed terms	22.5	19.0	14.4	30.3	***	25.7	22.9	27.1	18.5		16.2	31.1
Sign LOI	13.6	8.0	9.1	17.9	***	15.2	11.0	14.5	12.8		8.0	21.2
Close	6.1	4.0	4.0	8.1	***	7.0	5.4	7.3	5.0	**	4.1	8.8
Number of responses	71	71	35	36		26	26	33	38		41	30

Table 20: Deal Sources
Percentage of PE investor closed deals identified from different sources and percentage of closed deals PE investors consider proprietary

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR	Old	Young		Local	Global
Proactively self generated	35.6	30.0	37.7	33.5		39.3	35.5	35.8	35.4		35.3	35.9
Investment bank generated	33.3	25.0	30.5	36.0		33.0	37.0	38.2	29.1		33.0	33.7
Inbound from management	7.4	5.0	5.8	8.9		6.1	9.0	7.4	7.3		7.2	7.6
Other PE firm	4.3	0.0	5.4	3.3		4.1	2.2	4.1	4.5		5.0	3.5
Deal brokers	8.6	0.0	9.5	7.7		6.8	7.1	8.4	8.7		8.7	8.5
Executive network	8.6	5.0	8.3	9.0		8.8	8.5	4.6	12.1	***	9.1	8.0
LPs / Investors	1.7	0.0	2.5	0.9		0.6	0.7	0.4	2.7		1.2	2.3
Conferences	0.6	0.0	0.3	0.9		1.0	0.3	1.1	0.3		0.5	0.8
Other	0.0	0.0	0.1	0.0		0.1	0.0	0.0	0.1		0.1	0.0
% of closed deals considered proprietary	47.9	50.0	54.0	41.9	**	48.0	43.9	41.5	53.4		47.6	48.3
Number of responses	71	71	35	36		26	26	33	38		41	30

Table 21: Deal Selection
Ranking of factors considered by PE investors in choosing investments (with higher numbers more important).

	Mean	Median	Low AUM	High AUM	Low IRR	High IRR		Old	Young		Local	Global
Ability to add value	3.6	3.0	3.6	3.6	3.9	3.5		3.5	3.7		3.5	3.8
Business model / Competitive position	4.6	5.0	4.5	4.7	4.5	4.5		4.4	4.7		4.6	4.5
Fit with Fund	2.3	2.0	2.7	1.9	2.0	2.2		2.2	2.4		2.5	2.0
Industry / Market	3.2	3.0	3.4	3.0	3.3	3.0		3.3	3.1		3.5	2.8
Management team	3.8	4.0	3.7	4.0	3.9	4.0		4.1	3.6		3.8	3.8
Valuation	3.5	3.0	3.2	3.8	3.4	3.8		3.5	3.5		3.0	4.1
Number of responses	65	65	32	33	24	23		31	34		37	28

Table 22a: Return driver importance
The percentage of PE investors mention return drivers that they bet on in making investments.

	Mean	Low AUM	High AUM	Low IRR	High IRR		Old	Young		Local	Global
Growth in the value of the underlying business	100.0	100.0	100.0	100.0	100.0		100.0	100.0		100.0	100.0
Industry-level multiple arbitrage	64.8	74.3	55.6	50.0	65.4		66.7	63.2		61.0	70.0
Leverage	76.1	68.6	83.3	65.4	88.5	**	81.8	71.1		73.2	80.0
Operational improvements	97.2	94.3	100.0	100.0	96.2		100.0	94.7		95.1	100.0
Refinancing	36.6	28.6	44.4	34.6	42.3		45.5	28.9		29.3	46.7
Other	26.8	28.6	25.0	23.1	19.2		21.2	31.6		31.7	20.0
Number of responses	71	35	36	26	26		33	38		41	30

Table 22b: Return driver ranking
The return drivers that PE investors bet on in making investments ranked in order of importance (from high to low).

	Mean	Median	Low AUM	High AUM	Low IRR	High IRR		Old	Young		Local	Global
Growth in the value of the underlying business	5.7	6.0	5.8	5.7	5.9	5.5	**	5.7	5.7		5.8	5.6
Industry-level multiple arbitrage	2.4	3.0	2.8	2.1	1.9	2.4		2.3	2.6		2.1	2.9
Leverage	2.6	3.0	2.4	2.8	2.3	3.2		3.0	2.2	**	2.5	2.7
Operational improvements	4.6	5.0	4.5	4.7	4.9	4.6		4.7	4.5		4.5	4.7
Refinancing	1.0	0.0	0.8	1.3	0.9	1.3		1.2	0.9		0.9	1.2
Other	1.1	0.0	1.2	1.0	0.7	0.8		0.8	1.3		1.3	0.8
Number of responses	71	71	35	36	26	26		33	38		41	30

Table 23: Pre-Investment (expected) sources of value creation
The percentage of deals that PE investors identify having the following pre-deal sources of value.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR		Old	Young		Local	Global
Reduce costs in general	35.6	27.5	35.8	35.5		37.1	37.3		39.9	32.0		31.0	41.8
Improve IT / Information Systems	26.1	20.0	30.8	21.6		22.0	23.3		23.9	28.0		26.7	25.3
Introduce shared services	15.6	2.5	16.4	14.9		11.6	18.3		16.9	14.6		14.9	16.6
Increase revenue / improve demand factors	70.3	80.0	77.5	63.5	**	75.0	63.5		67.0	73.2		70.6	70.0
Redefine the current business model or strategy	33.8	29.5	27.8	39.5		43.0	29.8		32.1	35.3		32.8	35.2
Change CEO or CFO	30.6	27.5	33.4	28.0		29.2	32.9		30.9	30.4		29.3	32.4
Change senior management team other than CEO and CFC	33.4	30.0	37.3	29.7		32.5	33.1		27.9	38.1		35.4	30.8
Improve corporate governance	47.0	37.0	52.4	41.9		40.1	45.5		39.4	53.5		47.3	46.6
Improve incentives	61.1	73.5	60.7	61.5		58.3	67.0		65.5	57.4		59.0	63.9
Follow-on acquisitions	51.1	50.0	53.9	48.4		52.0	46.9		51.0	51.2		53.2	48.3
Strategic investor	15.6	10.0	16.4	14.8		12.3	14.0		14.4	16.5		15.1	16.2
Facilitate a high-value exit	50.0	43.5	61.0	39.6	**	45.6	42.0		40.4	58.1	**	53.5	45.4
Purchase at an attractive price (buy low)	44.3	43.0	49.2	39.6		38.2	43.3		40.9	47.1		44.9	43.5
Purchase at an attractive price relative to the industry	46.6	50.0	54.5	39.2	**	38.7	47.3		42.9	49.8		50.1	42.0
Other	9.8	0.0	9.4	10.2		0.0	14.3	**	9.4	10.1		12.4	6.4
Number of responses	74	74	36	38		27	27		34	40		42	32

Table 24: Pre-Investment Value Creators
Percentage of deals that each of the following groups actively participates in identifying pre-deal value.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR		Old	Young		Local	Global
Deal team	97.7	100.0	96.9	98.4		97.7	99.2		98.4	97.0		97.9	97.4
Operating partners	45.3	40.5	44.9	45.7		46.9	46.3		40.5	49.4		41.6	50.2
Outside consultants	36.8	26.5	27.9	45.1	**	35.0	45.3		42.1	32.2		35.0	39.0
Other	7.2	0.0	8.9	5.5		5.1	5.2		4.1	9.8		8.8	5.0
Number of responses	74	74	36	38		27	27		34	40		42	32

Table 25: Post-Investment (expected) sources of value creation
The percentage of deals that PE investors identify having the following post-deal sources of value and difference from pre-deal sources of value.

	Mean	Median	Change from Pre	Low AUM	High AUM		Low IRR	High IRR		Old	Young	Local	Global
Reduce costs in general	47.4	48.5	11.7	46.1	48.5		46.5	51.2		52.1	43.3	40.2	56.8
Improve IT / Information Systems	33.5	28.0	7.4	36.4	30.6		29.7	35.3		31.0	35.5	32.8	34.3
Introduce shares services	21.9	10.0	6.3	18.5	25.2		21.9	24.0		23.9	20.3	18.8	26.1
Increase revenue / improve demand factors	69.5	71.0	-0.8	73.9	65.3		70.7	68.8		67.2	71.4	69.4	69.6
Redefine the current business model or strategy	40.1	40.0	6.3	34.2	45.7	**	52.1	35.0	**	39.3	40.8	39.7	40.7
Change CEO or CFO	42.9	40.0	12.3	40.5	45.3		46.3	43.8		44.1	42.0	40.6	46.0
Change senior management team other than CEO and CFC	47.1	50.0	13.7	46.2	48.0		44.1	52.6		46.7	47.4	48.2	45.7
Improve corporate governance	52.1	50.0	5.1	56.2	48.2		51.0	52.1		49.9	54.0	53.6	50.1
Improve incentives	65.1	71.5	3.9	58.3	71.5		70.3	72.3		72.3	59.0	60.5	71.1
Make follow-on acquisitions	48.1	50.0	-3.0	45.1	50.8		47.8	46.7		50.4	46.1	50.7	44.6
Bring on a strategic investor	13.5	10.0	-2.1	14.5	12.5		14.1	10.1		13.3	13.6	15.4	10.9
Facilitate a high-value exit	58.8	60.0	8.8	62.7	55.0		55.6	53.6		55.9	61.2	62.8	53.5
Other	7.1	0.0	7.1	8.3	5.9		0.0	7.1		5.6	8.3	9.1	4.3
Number of responses	74	74	74	36	38		27	27		34	40	42	32

Table 26: Post-Investment Value Creators
Percentage of deals that each of the following groups actively participates in identifying post-deal value.

	Mean	Median	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
Deal team	93.3	100.0	90.6	95.9	93.7	95.6	93.5	93.2	92.1	94.9
Operating partners	51.1	50.0	46.8	55.1	56.2	48.5	45.7	55.6	43.6	60.9
Outside consultants	27.1	21.0	22.0	31.9	26.2	34.0	29.3	25.2	25.2	29.5
Other	8.6	0.0	13.0	4.3	3.7	7.9	5.6	11.1	9.2	7.7
Number of responses	74	74	36	38	27	27	34	40	42	32

Table 27: Types of Exit
The fraction of deals the PE investors target for different types of exit.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR	Old	Young		Local	Global	
IPO	18.8	11.7	10.9	26.4	***	23.7	18.9	20.6	17.2		12.1	27.7	***
Strategic sale	51.0	50.0	57.3	44.8	**	46.3	51.4	44.2	56.7	**	57.5	42.3	***
Financial sale	29.5	30.0	31.8	27.3		29.6	28.1	33.6	26.0		30.4	28.3	
Other	0.7	0.0	0.0	1.5		0.5	1.6	1.6	0.0		0.0	1.7	
Number of responses	63	63	31	32		22	23	29	34		36	27	

Table 28a: Exit Timing (Importance)
The factors PE investors consider in deciding on the timing of exit.

	Mean	Low AUM	High AUM	Low IRR	High IRR	Old	Young	Local	Global
Achieve operational plan set out to achieve	92.2	90.6	93.8	95.7	91.3	90.0	94.1	91.9	92.6
Capital market conditions	96.9	96.9	96.9	100.0	95.7	100.0	94.1	94.6	100.0
Competitive considerations	76.6	75.0	78.1	69.6	78.3	80.0	73.5	83.8	66.7
Hit IRR or ROI target	79.7	71.9	87.5	91.3	82.6	76.7	82.4	75.7	85.2
LPs pressure to return capital	56.3	46.9	65.6	56.5	56.5	43.3	67.6	48.6	66.7
Management's opinion	85.9	81.3	90.6	87.0	82.6	86.7	85.3	86.5	85.2
Other	14.1	15.6	12.5	13.0	13.0	13.3	14.7	10.8	18.5
Number of responses	64	32	32	23	23	30	34	37	27

Table 28b: Exit Timing (Rank)
The factors PE investors consider in deciding on the timing of exit by rank (where higher rank is more important).

	Mean	Median	Low AUM	High AUM	Low IRR	High IRR	Old	Young		Local	Global	
Achieve operational plan set out to achieve	5.5	6.0	5.4	5.5	5.8	5.3	5.3	5.6		5.5	5.4	
Capital market conditions	5.3	5.5	5.4	5.2	5.3	5.3	5.4	5.2		5.0	5.7	
Competitive considerations	3.5	4.0	3.5	3.5	3.2	3.1	3.4	3.5		3.9	2.9	
Hit IRR or ROI target	4.0	4.0	3.9	4.2	4.2	4.6	3.8	4.3		3.9	4.3	
LPs pressure to return capital	1.8	1.5	1.5	2.0	1.9	1.8	1.4	2.1		1.6	1.9	
Management's opinion	3.7	4.0	3.4	4.1	3.8	3.7	4.3	3.2	**	3.8	3.7	**
Other	0.7	0.0	0.7	0.7	0.7	0.7	0.6	0.7		0.5	0.9	
Number of responses	64	64	32	32	23	23	30	34		37	27	

Table 29:
How is the firm organized?

	Mean	Low AUM	High AUM		Low IRR	High IRR		Old	Young		Local	Global	
Industry	54.4	54.1	54.8		65.5	55.2		64.7	46.7		54.5	54.3	
Criteria	11.4	10.8	11.9		13.8	3.4		11.8	11.1		6.8	17.1	
Product	16.5	5.4	26.2	**	17.2	17.2		29.4	6.7	***	2.3	34.3	***
Generalist	36.7	40.5	33.3		27.6	34.5		26.5	44.4		43.2	28.6	
Other	6.3	2.7	9.5		10.3	6.9		8.8	4.4		2.3	11.4	
Number of responses	79	37	42		29	29		34	45		44	35	

Table 30: PE Firm Organization
The percentage of investment professionals in different specializations.

	Mean	Median	Low AUM	High AUM		Low IRR	High IRR		Old	Young		Local	Global	
Deal professionals	54.2	50.0	57.7	51.2		55.1	59.2		59.3	50.4		58.7	48.6	
Deal sourcing	8.9	1.3	11.5	6.5		9.8	3.5	**	6.0	11.1		9.8	7.7	
Deal execution	9.6	0.0	10.0	9.2		10.4	4.4		5.8	12.4	**	11.5	7.2	
Operating professionals	8.7	4.3	8.9	8.4		9.8	6.4		7.2	9.8		7.0	10.7	
Consulting professionals	1.2	0.0	1.1	1.2		0.8	0.7		0.9	1.3		1.2	1.1	
Shared services professionals	5.7	0.0	3.3	7.8		5.3	7.9		6.2	5.4		3.1	8.9	**
Fundraising professionals	3.2	1.2	1.6	4.6	***	4.0	2.6		2.9	3.4		1.7	5.1	***
HR professionals for portfolio companies	0.4	0.0	0.4	0.3		0.2	0.3		0.2	0.5		0.2	0.6	
Capital markets professionals	1.8	0.0	0.9	2.5		1.0	2.7		2.9	0.9		0.3	3.6	**
Other	6.5	0.0	4.7	8.1		3.6	12.4		8.6	4.9		6.7	6.3	
Number of responses	79	79	37	42		29	29		34	45		44	35	

Table 31: Operational Engineering Assistance
Percentage of private equity investors who utilize a non-limited partner advisory board, senior advisors or a CEO council, or hire strategy consultants.

	Mean	Low AUM	High AUM		Low IRR	High IRR		Old	Young		Local	Global	
Non-LP Advisory Board or Group of Advisors	38.0	32.4	42.9		27.6	48.3		38.2	37.8		47.7	25.7	**
Senior Advisors / CEO council or equivalent	48.1	35.1	59.5	**	51.7	62.1		52.9	44.4		47.7	48.6	
Hire strategy consultants to help with operating plans	31.6	18.9	42.9	**	41.4	34.5		41.2	24.4		27.3	37.1	
Number of responses	79	37	42		29	29		34	45		44	35	

Table 32: Cluster Analysis

		Debt/ Capital	Debt/ EBITDA	CS Time	CS Trade Off	Invest in Business	Invest in Mngmt	Invest in Add. Val.	RecruitB	Prop Deal	Growth	Op. Imp.	Cost. Red.	Rev. Growth	Ch. CEO	BuyLow SellHigh	AUM	Op. Partner	Target Multiple
Cluster 1	Mean	0.54	3.64	7.87	3.48	7.83	4.04	3.04	0.30	0.50	0.91	0.04	25.17	73.04	31.39	181.48	7.2	13.3	3.2
	Median	0.60	3.50	9.00	3.00	8.00	4.00	3.00	0.00	0.50	1.00	0.00	20.00	80.00	29.00	175.00	2.1	6.0	3.0
	N = 23																		
Cluster 2	Mean	0.59	3.95	7.69	5.00	7.38	3.75	4.00	0.44	0.46	0.63	0.25	55.38	82.19	40.06	190.38	9.1	91.6	2.7
	Median	0.60	4.00	8.00	5.00	7.50	3.50	4.00	0.00	0.50	1.00	0.00	55.50	87.50	40.50	190.00	1.8	100.0	3.0
	N = 16																		
Cluster 3	Mean	0.54	4.11	7.32	3.58	8.47	3.79	3.79	0.26	0.53	0.84	0.16	31.42	66.16	30.00	68.74	12.3	55.1	2.6
	Median	0.60	4.00	8.00	4.00	8.00	4.00	4.00	0.00	0.50	1.00	0.00	20.00	70.00	26.00	70.00	8.0	60.0	2.5
	N = 19																		
All	Mean	0.55	3.88	7.64	3.93	7.91	3.88	3.55	0.33	0.50	0.81	0.14	35.55	73.31	33.33	147.00	9.4	48.6	2.9
	Median	0.60	4.00	8.00	4.00	8.00	4.00	3.00	0.00	0.50	1.00	0.00	25.00	80.00	30.00	150.00	2.7	39.5	2.5
	N = 58																		

Table 33: Factor Analysis

Principal factors, unrotated

58 observations, 11 retained factors, 143 parameters

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	2.56948	0.60272	0.2659	0.2659
Factor2	1.96676	0.21586	0.2035	0.4695
Factor3	1.75090	0.49645	0.1812	0.6507
Factor4	1.25445	0.19096	0.1298	0.7805
Factor5	1.06349	0.30866	0.1101	0.8905
Factor6	0.75484	0.24734	0.0781	0.9687
Factor7	0.50749	0.03925	0.0525	1.0212
Factor8	0.46825	0.20500	0.0485	1.0696
Factor9	0.26325	0.08955	0.0272	1.0969
Factor10	0.17370	0.11930	0.0180	1.1149
Factor11	0.05440	0.05634	0.0056	1.1205
Factor12	-0.00195	0.07961	-0.0002	1.1203
Factor13	-0.08156	0.05998	-0.0084	1.1118
Factor14	-0.14154	0.00799	-0.0146	1.0972
Factor15	-0.14953	0.06657	-0.0155	1.0817
Factor16	-0.21610	0.05967	-0.0224	1.0594
Factor17	-0.27577	0.02201	-0.0285	1.0308
Factor18	-0.29778	.	-0.0308	1.0000

LR test: independent vs. saturated: chi2(153) = 376.57 Prob>chi2 = 0.0000

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Factor9	Factor10
dtcap	0.5621	-0.0327	0.4938	0.0708	-0.2085	-0.256	0.0875	-0.058	0.1012	0.18
dteb	0.5035	-0.041	0.6676	-0.0047	-0.1817	0.0605	-0.0299	0.1657	-0.105	0.0536
cstime	0.1665	-0.2789	0.3737	0.2625	0.2806	-0.1203	-0.2155	0.1247	0.0784	-0.179
cstrade	0.1097	0.0423	-0.1426	0.149	-0.0639	0.1176	0.2779	-0.0466	0.3801	-0.0094
invbus	-0.2527	0.1049	0.0168	0.362	-0.5344	-0.1266	0.1563	0.1689	0.0189	-0.0297
invmgmt	-0.2061	-0.2732	0.152	-0.1401	0.5712	0.1638	0.0861	0.044	0.1126	0.1131
invaddv	0.5915	0.093	-0.2394	-0.3619	-0.1367	0.1696	-0.2389	-0.112	0.0312	0.1034
recruitb	0.1495	0.5952	0.1109	0.2706	0.1373	0.0994	-0.2537	0.0958	0.1866	0.0291
propdeal	-0.3721	0.445	-0.1385	0.2428	-0.0297	0.3292	-0.0414	0.1944	-0.0821	0.1714
growth	-0.6203	0.3045	0.4265	-0.4185	-0.1212	-0.0479	-0.1315	0.0062	0.095	-0.0139
opimp	0.5183	-0.3698	-0.5246	0.3405	-0.0026	0.0244	-0.1451	0.2026	0.0041	-0.0026
costred	0.5507	0.1235	0.0199	-0.366	0.1529	-0.1378	0.1513	0.174	-0.0065	-0.0304
revgrow	-0.0509	0.5792	-0.1024	-0.1207	0.188	-0.2658	0.1383	0.2521	-0.0248	-0.0651
chceo	0.3892	0.6732	-0.211	-0.0282	-0.0566	-0.0677	-0.1126	-0.2329	0.0131	-0.1147
buylowsellhi	0.0983	0.345	0.016	0.2469	0.3541	-0.245	-0.0012	0.0297	-0.0745	0.1097
multarb	0.2566	0.2428	0.1569	0.3298	0.2231	0.1216	0.2837	-0.291	-0.1381	-0.017
oppart	0.3305	0.0754	-0.2566	-0.3633	-0.0318	0.1694	0.2094	0.2271	-0.0102	-0.0237
aum	0.2185	0.1442	0.4313	0.0482	-0.032	0.5167	0.0534	0.058	-0.0343	-0.1425

Table 34: Relation of Founder and Firm Characteristics

	Mean - All	Finance	Operations	Other PE
aum	9.5	10.3	11.1	4.7
year_founded	1993.5	1992.7	1994.5	1994.2
dtcap	0.56	0.52	0.58	0.57
cstime	7.47	7.33	7.76	7.00
cstrade	3.86	3.26	4.64	3.22
invbus	7.77	7.44	8.20	8.56
invmgmt	3.82	4.26	3.56	2.89
invaddv	3.63	3.37	3.52	4.22
recruitb	0.31	0.30	0.32	0.22
propdeal	0.51	0.54	0.46	0.47
growth	0.80	0.78	0.80	0.78
opimp	0.13	0.11	0.12	0.22
costred	35.6	25.0	38.1	42.3
revgrow	70.3	66.6	70.5	80.6
chceo	30.6	26.3	30.4	48.8
buylowsellhi	140.9	155.4	150.2	125.0
Number of responses	79	27	25	9
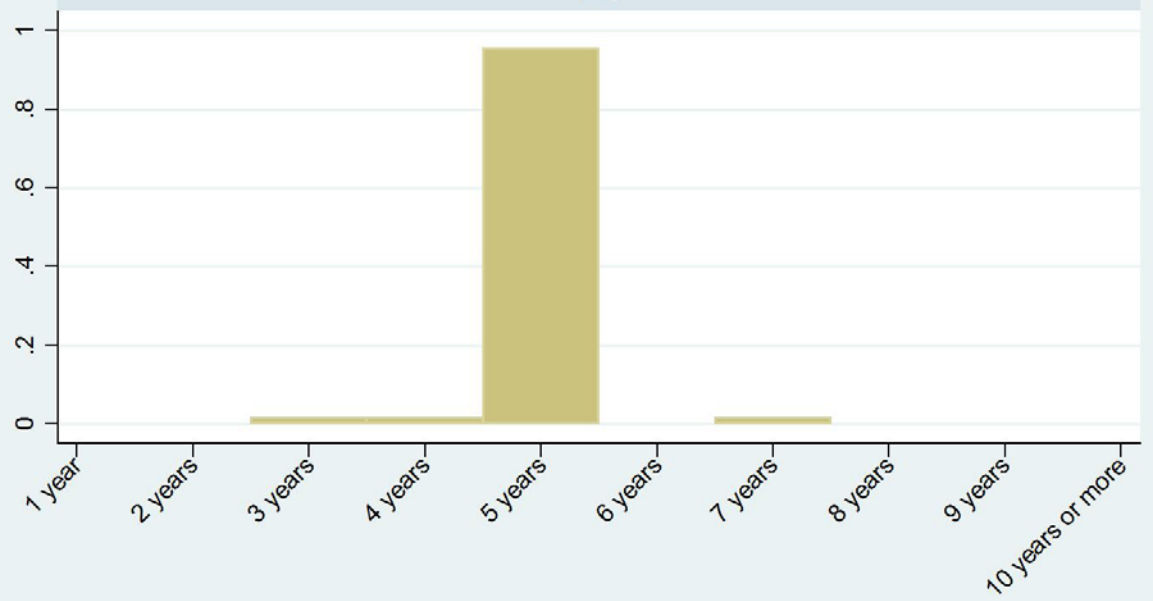
Figure 1: Years of Forecasts Used by PE Investors